COMMITTEE WORKSHOP

BEFORE THE

CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

In the Matter of:	)	
	)	
Preparation of the 2007	)	Docket No.
Integrated Energy Policy	)	06-IEP-1E
Report (2007 IEPR)	)	
_____	)	

CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

TUESDAY, JUNE 19, 2007

9:00 A.M.

Reported by:
Peter Petty
Contract No. 150-04-002

COMMISSIONERS PRESENT

Jackalyne Pfannenstiel, Presiding Member

John Geesman, Associate Member

Arthur Rosenfeld, Associate Member

ADVISORS PRESENT

Melissa Jones

Timothy Tutt

STAFF and CONTRACTORS PRESENT

Gary Flamm

Michael Siminovitch, PhD,
California Lighting Technology Center,
University of California, Davis

John Sugar

Lorraine White

ALSO PRESENT

Pamela Horner, Osram Sylvania

Joseph Howley, GE Lighting

Dale Work - Philips Lighting

Gary Fernstrom, Pacific Gas & Electric Company (PG&E)

Gary Greenburg, Southern California Edison Company (SCE)

Neil Sybert, San Diego Gas & Electric Company (SDG&E)

Alan Suleiman, Sacramento Municipal Utility District (SMUD)

Marci Sanders, Northwest Energy Efficiency Alliance (NEEA)

John Cockburn, Office of Energy Efficiency, Neutral Resources Canada (via telephone)

Steve Coyne, Beletich Associates (via telephone)

Shane Holt, Australian Greenhouse Office (via telephone)

Paul Waide, International Energy Agency

Chris Calwell, Ecos Consulting, on behalf of Pacific Gas and Electric Company

Noah Horowitz, Natural Resources Defense Council

Ethan Thorman, Super Bulbs

Carol Lenk, Super Bulbs

Bruce Nelson, Pacific Coast Lighting
also representing American Lighting Association

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P R O C E E D I N G S

9:06 a.m.

PRESIDING MEMBER PFANNENSTIEL: I think we are about ready to get started.

MS. WHITE: Yes ma'am.

PRESIDING MEMBER PFANNENSTIEL: Everybody has their toys and gadgets and demos.

I am Commissioner Jackie Pfannenstiel. I am the Presiding Commissioner on the Integrated Energy Policy Report Committee. To my right is Commissioner Geesman who is the Associate Commissioner on that committee. To his right is his advisor, Melissa Jones. To my left is my advisor, Tim Tutt.

Commissioner Rosenfeld is going to be joining us. This is a joint workshop between the Integrated Energy Policy Report Committee and the Efficiency Committee.

So welcome to everybody here. This is clearly a day of gadgets and demos and lighting. We are focusing today on improving the efficiency of residential lighting. We are actually focused on residential lighting because we see some of the greatest opportunities for efficiency improvements in that area.

Residential lighting accounts for about 20 percent of all residential electricity use. We have made some great strides in the technology but I think we have seen just in the past couple of months that there is a lot of interest in moving a lot farther and a lot faster than we had anticipated. The technology is there. We can move today from the standard incandescent light bulb to a compact fluorescent light bulb at something like four times the efficiency.

But there are other options and I think the industry is moving towards other ways of giving us choices in lighting.

So we have today a very full agenda of many experts in the field that will put on the record at this proceeding the opportunities that we have and ways that we can move forward in lighting. And I am hoping that the record in this proceeding will be robust enough to allow Commissioner Geesman and myself to make some policy recommendations of where California needs to go in lighting.

With that, Commissioner Geesman, any opening comments?

ASSOCIATE MEMBER GEESMAN: The function

that the Energy Commission designed to play in this area since 1975 has been to step in to environments where markets don't work to their optimal level.

We are tasked, and have been since we were created, with the assignment to determine the appropriate level of economic efficiency in the way in which society invests its electric rate paying dollars for particular appliances. We do that for buildings. We have a parallel responsibility in appliances. I recognize that there are those in the political process that don't think that is an appropriate role for government but for 32 years that's been one of our primary responsibilities.

This is an area where there are claims of astounding cost-effectiveness in moving to technologies that are commonly available. I'd be the first acknowledge that in some instances it requires a bit of a paradigm shift. You need to look at a light bulb perhaps as an investment as opposed to an expense.

But our statutory responsibility is pretty direct in saying that when we see those anomalies, when we see those market

dysfunctionalities, we're supposed to step in.

And I also recognize there are those in our political process resistant to too rapid a pace of change. And to them I would say, if you want to live in a post-AB 32 world that's what the voters appear to want us to do. That's what the political leadership in California is very clearly saying. So I think we should anticipate a more rapid pace of change in this area than we have seen in the past.

I look forward to the discussion today to determine what the credibility of some of these claims are, what the applicability of these technologies are, and what the Energy Commission should do about it. Thank you.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Commissioner Rosenfeld, any opening comments?

ASSOCIATE MEMBER ROSENFELD: Sorry, the train was late. I am just terribly pleased to be here. I remembered while driving in here that when I got into following lighting in California in 1973 that I think good practice was like four or five watts per square foot. Now you guys are talking about going down a factor of ten. I think

that's pretty encouraging and it's wonderful. Thank you.

PRESIDING MEMBER PFANNENSTIEL: Lorraine, logistics.

MS. WHITE: Yes ma'am, thank you. On behalf of the staff putting together this workshop I would like to welcome you all, both those of you in the room and those attending on the webcast and on the phone.

Today's workshop, as the Commissioners have said, is to allow us to discuss opportunities to improve residential lighting in California and work any recommendations that come out of this discussion into the Committee's report for the 2007 Integrated Energy Policy Report.

Just a few logistical things to go over quickly. For those of you who have not joined us before here at the Commission, restroom facilities are out the double door and to the left. Refreshments can be found on the second floor under the awning in our snack bar.

In the event of an emergency we ask that you calmly follow staff out any of the exits and reconvene at Roosevelt Park, which is kitty-corner from the Commission here, until we are given the

high sign to return when it is safe.

For those participating through our webcast and on the telephone, we do have a tool-free 1-800 number that allows you to call in, and at the appropriate time we will be asking participants to ask questions or make comments. The procedure is normally the Commissioners, those in attendance here in person and then those on the phone. That toll-free number is 800-857-6618. The passcode is I-E-P-R or IEPR. I am the call leader. And of course the webcast, which is available through the Internet on the Energy Commission's website, can also be followed if you just want the audio and just the visuals.

For those of you that will be participating in person we do encourage you to ask questions and make comments at the appropriate time. Gary will be inviting folks to question the panelists and any of the presenters today as we go through the morning and the afternoon.

As Commissioner Geesman and Chairman Pfannenstiel have mentioned, we do have pretty packed agenda. We are going to be covering an overview of the lighting technologies and existing policies. We are going to be having information

provided to us from the manufacturers on their perspective related to lighting efficiency.

We also have a panel on the utilities' perspectives about lighting efficiency and their programs. And then another panel to talk about the status of efficiency policies and where we may go in the future. As I mentioned we are encouraging folks to participate as much as possible in these discussions.

For a perspective related to what this workshop will be used for: The Integrated Energy Policy Report proceeding is an effort undertaken by the Commission in two-year cycles. We are charged with developing assessments and forecasts for supply, demand and price. And as a part of the evaluation, looking at ways in which efficiency and conservation may be used to lower demand, improve the performance of the system and perhaps address environmental issues.

We have identified for his particular proceeding several very key topics in which we will drill down in more detail. In particular lighting efficiency is one of the five areas that we have focused on in particular in this particular cycle. We would like to be able to

take the information that we get from staff's work and your input to develop and recommend policies on where we need to go in the future to not only identify potential for improving lighting efficiency but also realizing it.

It is important that we get information from you as well as utility participants, other agencies and members of the public. This material will be packaged in the IEPR Committee's report that will be coming out in late August with the intent of being adopted by the whole Commission by the end of October and transmitted to the Legislature and Governor by November 1.

This is an open and transparent process. We encourage as much public participation as possible and input from all of the relevant stakeholders.

We post information, make it public through our website and also in discussions among staff. If there's things that you can't find there you can always contact me, or in the particular issue of the lighting efficiency topic, John Sugar and Gary Flamm. The materials that have been published for this workshop, the notice and agenda, have further contact information

available for folks to contact staff and the Commissioners.

So with that I would like to hand it over to Gary Flamm, Commissioners, unless there is any questions. Wonderful.

MR. FLAMM: Thank you, welcome everybody. My name is Gary Flamm, I am the lighting program lead for building and appliance standards. I'd like to take this opportunity to introduce our newest lighting technical person, Harinder Singh. Please stand up, Harinder. So those of you who I have had the pleasure to work with, Harinder will, I'm sure, enjoy working with you also. He will be focusing on the appliance standards.

There's two type of standards that the Energy Commission administers, one are the appliance standards, Title 20. Those are devices that have minimum efficiency standards and/or labeling requirements and/or reporting requirements before they can be sold in California.

A number of lighting technologies are regulated. I would like to bring everyone's attention to the January 1, 2008 Incandescent

Lighting Standard that is going to greatly favor a five percent reduction in general service incandescent lamp wattage. So the 100 watt incandescent bulb will become a 95 watt and so your respective bins of 100, 75, 60 and 40 will basically be five percent less wattage starting January 1. And we are anxious to see how the industry responds to that standard.

Title 24 are the building standards, the building energy efficiency standards. And those are standards that set minimum -- maximum power budgets, typically per square foot, control requirements and some efficiency requirements for residential lighting. That translates into at least 50 percent of the power in a residential kitchen has to be high efficacy and all other rooms in a residential building have to be high efficacy or controlled by a particular control.

So with that we, we intend to rotate the panels that are sitting at the table. Our first presenter will be Dr. Michael Siminovitch from the Lighting Technology Center and followed by that we will have the lamp industry who are now seated at that table.

After they are done with their

presentation we will rotate them out and bring the utility folks to the table. And we have one utility person already warming up the seat, Gary Fernstrom, thank you. So with that I would like to introduce our first speaker, which is Dr. Michael Siminovitch.

MR. FERNSTROM: And lighting up the table.

MR. FLAMM: And lighting up the table. Thank you, Gary.

DR. SIMINOVITCH: First of all, thank you so much for inviting myself and the Lighting Technology Center to be involved in this process. I think this is a particularly exciting time to be living in California. I think we have very significant energy issues to address but we have lots of great technologies and good people and programs I think to address these emerging needs.

What we did is we took a very focused view in terms of the kinds of information that we are looking at now to bring focus to this issue but we addressed it in a roundtable fashion. What we did is we brought in a lot of our industry partners, the utility partners, the energy advocates, to really look at what could California

do to address this very specific issue and opportunity for Edison-based fixtures.

So what we're going to do today is really a very broad-brush. Here are the critical issues. Here are the critical problems. Here are some potential avenues that we could look at to address this problem.

Understanding that our very clear goal here is to save energy as well as reduce peak demand. So these are our objectives, our primary goal for this activity.

In California we have got two, broad opportunities for savings. One is in new construction and the other one is in existing buildings. And these are the two big opportunities. With the primary focus being residential but of course looking at other areas that have similar types of approaches like hospitality and some light commercial.

In new construction we have been very successful with Title 24. And Title 24 allows a number of energy efficient, both approaches and technologies, to address the issue as the building is being built and in the design process.

The focus of this activity that we are

engaged in now is predominately existing construction and addressing Edison sockets, incandescent lamps. And the primary focus on this of course is residential but we see very similar dynamics and technologies in hospitality and in commercial. But the focus on this is Edison sockets in residential applications.

Of course this sea of residential-type portables is the heart of the matter, okay. This is where we see predominant use of incandescent technology. So a huge array of technology that goes into people's homes and into hospitality applications. A big focus for us.

Also residential hardwired fixtures. This is another enormous opportunity in California. Fixtures that are put in during major renovation or in new construction that use incandescent light sources.

And of course hospitality portables. Still a big opportunity for California looking at the application of efficient technologies inside portable lamps in hotels.

And of course in commercial. There are some small buildings down the street here that you would be hard-pressed to find an efficient light

source in. So I think that we have got lots of applications here in California to light our own public house with efficient technology. So I think that the potential is broad but highly focused on residential.

The background on this is, where is this all coming from and multiple issues. I think the activity with the Levine and Huffman bills I think helped focus a lot of attention on this process and it heightened the dialogue. We worked with both of these processes and I think the process has been really one of dialogue. And I think it has really helped to focus the conversation and bring the conversation to California as a leader.

Ongoing activities through Title 20 have been highly focused on this and part of the dialogue. Certainly we have seen a lot of national efforts on this issue and international interest in this. So a lot of interest in the incandescent and the Edison base.

So what are the efficiency opportunities for the Edison base fixtures? How do we get there? It is going to be a dynamic mix of technologies and policies. And what we really need to focus in on, what's the key processes that

need to occur here in California to put that unique set of technologies and policies together. So that's where we've really been focusing on.

Our process, as most of you know, is one of roundtable. What we do is we assemble people together and we ask questions. We try to assemble insights based on collective knowledge. This included our entire industry in this process.

So today's presentation is basically organized in this manner. And again, it's a roundtable. It's 50,000 feet and we can drill down into this in terms of the ultimate report that we're working on.

So the organization on this is first a technology overview, a listing of the policy options with some of the consequences and unintended consequences, and then getting into a series of implementation issues. And then looking at recommended next steps. What do we do next in terms of connecting the dots and putting together an integrated plan of technologies and policy. So I am going to come back to this kind of road map throughout the presentation just to focus us.

First of all, the technologies in use. What do we typically use in California? The main

players of course are A lamps, are BR lamps, the compact fluorescent and the PAR lamps. These are sort of the mainstream technology that's used in our homes and in hospitality.

A lamp, very common. Typically 10 to 17 lumens per watt. Many applications. General applications that require isotropic or just a uniform distribution of light.

BR lamp, very popular in California. California is unique in the country in seeing a lot of applications of down lights. And pre-Title 24 '05 was a major growth in terms of incandescent lighting technology in the home, predominately in down lights. Slightly reduced overall efficacy. The lamp physics is basically the same except there's a reflector on it that reduces some of the output of the lamp.

PAR lamps, lots of applications in exterior. Principally for directed and contrast applications. If you want high contrast you use PAR lamps or R lamps.

Compact fluorescent. Again, 50 to 70 lumens per watt, significant energy saving opportunity. And certainly we have seen significant growth in the use of the compact

fluorescent lamp in the home and in hospitality.

PRESIDING MEMBER PFANNENSTIEL: Michael, would you just give us quickly a starting point. What percentage of the 90 million light bulbs sold in California last year --

DR. SIMINOVITCH: I'm getting into that.

PRESIDING MEMBER PFANNENSTIEL: Okay, great.

DR. SIMINOVITCH: It's a great question and a little residential lamp statistic.

So what we did was we took our roundtable. We have great access to information through our industry partners and also through our builder partners. We have very warm relationships with the building industry.

And what I'm going to do in the next few slides is just to calibrate that question n terms of -- If you look at a snapshot of 2005 and you look at -- the yellow is essentially incandescent technology and the green is essentially fluorescent technology. And I am going to ask you to focus just on the compact fluorescent.

The compact fluorescent in 2000 was about one percent of estimate of the marketplace in terms of existing residential. We saw some

very significant growth in 2005 up to nine percent. And it gets a little bit more interesting because further data, this was based on a pretty exhaustive study done. But based on some of our discussions with our industry partners, 2007, two years later, is that we're seeing in the 15 percent of compact fluorescent.

Now if you take this 15 percent and you fold it into what is actually happening relative to Title 24. And what I am going to do is I am going to give you a dual calibration here.

We went out to our builder partners and we said look. We want to find out what's happening in today's homes. What is actually getting built in California today? How is it responding? Okay. So what we did is we worked with our builder partners. We went out and we did some studies and we did some analysis and this is what we came up with.

And again, we got a lot of data on this and we're trying to present this as simply as possible. But if you looked at homes that are built in 2007, built to the '05 Title 24, if we looked at -- fluorescent is about 58 percent. About 60 percent of the light points in the home

and incandescent is about 40 percent. Now this reflects both the hardwired fixtures and the portables, okay.

What this really indicates is Title 24 has been remarkably successful in terms of changing the paradigm in California's homes. This is a success story, okay. Now this reflects both -- some usage of portables in here. If you actually look at just the hardwire the numbers are even better.

Now it's a little bit depressing because what happens is you typically don't hardwire inside lots of bedrooms so this is really reflective of some of the insightful things that were done in the kitchen, the carryover of CFL down lights in the hallways and et cetera.

So a very encouraging story here where we're seeing more than 50 percent of California's homes are compact fluorescent that are being built now. So that's calibration number one.

Calibration number two, so that's the data that you just saw here. If you're looking at the issues now with the focus of existing incandescent, this whole map here maps into this little slice of the pie here. This is California

existing. You know, the whole deal. And so that little sliver here is this great success story.

It's going to take some years for this piece of pie to grow. So the real interest here is this piece of pie here that about 80 percent of the home is incandescent and about 20 percent of it is fluorescent, plus or minus.

So the thing to refresh on this is one, very successful in Title 24. That's a small piece of pie. What we are really looking at is the blue portion here, which is more reflective down here. What can we do down here with homes that are already out there, okay. So that's sort of the calibration of the industry data with the builder data that we have, okay.

The other very interesting thing that we found out in this builder survey was that there's approximately ten dimmers in every one of these new homes. Now that's one of the compliance things, okay. So what we said was, use efficient technology and/or an occupancy sensor or a dimmer. Well, dimmers are slightly less expensive than occupancy sensors and people have chosen to use dimmers in their new applications.

What is even more interesting, that

greater than 90 percent of the incandescent hardwired fixtures are on dimmers. So that's an issue and I'm going to talk about it in a minute.

So in terms of future technologies. Okay, where do we go from here?

The opportunities in California are enhanced incandescent, halogen, CFL and LED. And I'm going to talk about this in a little bit more detail but basically California is going to address those Edison sockets with some strategic mix of these.

I'm sort of walking through this a little bit. An incandescent lamp produces this broad sort of spectrum and it produces a lot of heat. Now the idea here is that incandescence is just when you run current through the lamp it glows and it makes light, and it makes a lot of heat. The process --

If we can push some of this heat into light we increase the efficiency of it. So it's a very straightforward process and the ways to address this is with halogen, halogen infrared and enhanced filament. And these are sort of the strategic mixes of technologies that can be applied.

What we have done is I've gone out and I've worked with our industry partners and I've worked with people that are very expert in halogen technology and I've asked them, what sort of -- Where do you think we're going to be?

So if you start off with a standard A lamp at 10 to 17 lumens per watt, there's tungsten halogen at 18 to 20, tungsten halogen HIR. And this is halogen infrared, 25 to 27 lumens per watt. I don't want to get hung up on numbers here. I just want to sort of give you an idea of the potential. This is something that is fairly achievable today.

Tomorrow, and I am talking near-term, this is going to take some effort in the laboratory, super tungsten HIR. This just means the same technology but with advanced materials, more coatings, and with advanced optics for infrared concentration. You can get into the close to 30 lumens per watt.

Super tungsten with some compromise in light, you can actually get to 30, 40 lumens per watt. Very small reductions in light yield increases in efficiency so it's a trade-off. This is where we could be tomorrow with some effort.

Lots of activities going on with advanced filaments. This is a blow-up picture of an incandescent filament. A filament is actually a very long piece of wire, a very long piece of wire that has been tightly packed inside the lamp.

If you increase the surface area on this or you use advanced materials on the actual filament you can actually increase the temperature of this to get up into very high efficiencies. Theoretically you can get into 60 lumens per watt before the tungsten starts melting. There's actually patents out there on tungstens that get above that temperature. But 60 lumens per watt is a very high efficiency but takes very advanced technology.

LEDs are a very significant player. We're seeing 40 to 60 lumens per watt today with fairly straightforward approaches. We're actually measuring things in the laboratory at Davis that's in the 100 lumens per watt region.

To take that potential and sort of say, what does that mean relative to California and just sort of say, look, what's a little bit of a comparison here. If we take incandescent technology today, okay, and we look at sort of the

approximate lumen match with the CFL, if we then map that over to enhanced incandescent -- And I'm not going to argue about the numbers right now but somewhere between 20 and 25 lumens per watt.

Let's say we move it to 20 lumens per watt. Well basically we go from 100 to 75, 75 to 50, 60 to 40 and 40 to 30. Now as you get down to the lower wattage it becomes progressively more difficult. This is going to take some, this is going to take work. Very low wattage halogen takes some significant effort to do but can be done.

So what I wanted to do was show you really quickly just a couple of these technologies. This is actually -- This is an LED down light. This is about 12 watts and it's about 60 lumens per watt. And I am relatively pale but you can see the color is pretty good. This is in the 90 CRI region. Ninety CRI, very high efficiency, and this will be commercially available very soon. And so this is --

ASSOCIATE MEMBER ROSENFELD: Michael, could you mention what you think the costs are going to be.

DR. SIMINOVITCH: I don't typically get

into costs but this is going to be, I'm going to say cost-effective.

This is another LED incandescent light, okay. But again, I always use the Michael pale factor. And you can sort of see that I'm relatively well-rendered. This is an LED technology that's available today.

This is actually a very interesting LED A lamp. One of the issues on the market barriers were, I don't like the look of it, I don't like whatever. So this is an A lamp configuration and has a series of LEDs in it. So it has the same form factors, color, appearance in a friendly A lamp kind of configuration. And this is under development now.

So lots of technologies up there for both existing and emerging within the scope of the kinds of things that California can do.

Now in terms of how do we take the potential that we've got -- We've talked about the potential in California being great. We've talked about the technologies and there's some near-term technologies we can do and ones coming down the road very soon. How can we map those three things? How can we put those into California?

If you look at the application of efficient technologies today we could actually, we could actually get much better with the application of this.

What could be done? We're not going to say, do this, do this, do this. What we're going to do is we're going to review these and make some suggestions in terms of where we ought to go.

I only have 40 minutes so I am not going to go through the whole deal here. I started off with 300 slides but Gary yelled at me and said, you need to get it down to something more realistic. I always listen to Gary.

So the policy options again brought -- and we're going to drill down a little bit on this thing. As you know the first reaction to this was, okay, let's ban the technology. And we worked closely with some of the legislative folks and said, you need to ask the next step kinds of questions. What happens when you eliminate a class of technology.

This on the surface is fast, is straightforward and achieves the goals but there's a lot of, there's a lot of problems with it. You know, the problem is when technology goes away

that's very inexpensive, very lightweight, you create artificial markets. And this is, of course, the worst case scenario of an artificial marketplace where we start importing lamps into California off the seacoast.

A ban. There's issues of backwards compatibility where you've got CFLs going back into incandescent sockets that have dimmers on it. And this is a, this is a real significant problem. Incandescent technology dims sweetly. You know, this is drinking wine in the kitchen, this is chopping carrots, But they dim sweetly. I don't know, I get crazy talking carrots. (Laughter).

This is also making a noise which you probably can't hear. Now not all fluorescent do this. But the reality is,is that -- I can always forward messages to anybody they like but I get, you know, 10, 15 messages, how come your lamp flickers when I dim it? So I have to go through the first process, it's not really my lamp. But I am viewed as Mr. Fluorescent so it's --

Ban, negative response from consumers. I mean, I don't think that a ban -- Eliminating a technology that people -- You know all this.

Misapplications. If you can't buy this

and you can buy this what are people going to put in their table lamps. They might put in a small R lamp. And these things come in all sizes and they're inexpensive. They're also less efficacy than this so California could go backwards like we did in down lights. In down lights we went from this to this. So this, this is an issue.

So this was very significant because our builder surveys, 98 percent of the incandescent sockets are on dimmers. So this is going to suggest some proactive policy potentials and I'm going to get to that in a minute.

Appliance standards, the technology-neutral, efficacy-based approach. This is a more even, lumens per watt, not targeting a specific technology.

The benefits on this is technology-neutral and it addresses the efficiency issue on this. There's nothing wrong with this lamp. This lamp is isotropic, it provides really high quality light, it dims really smoothly. What is a challenge on this is that it's 10 to 17 lumens per watt. So just banning A lamps is not the way.

Some of the tricky, thorny issues with Title 20 is that it's going to require close

integration with federal standards and availability.

The other challenges is that increasing efficiency of this is going to involve a story. And the story undoubtedly is going to be, energy savings and green. Well what does that say about this? It creates a mixed message to the marketplace. If it's done transparently, maybe, but I doubt that that's going to happen, transparency. So there's this whole issue of the mitigation -- migration of CFLs to new, efficient technology. Definitely something the policy doesn't want to let happen. This is a big, a big worry.

Again, I have come full circle on the Building Code. Title 24 has been a very successful process and I think that it has been highly effective. Forty-two percent of high-efficiency fixtures in 2007. It's been a big, big win for California.

The problem on this is that it doesn't address the largest, single opportunity. It's the 200,000 homes that get built every year versus the 12 million that exist. So this is kind of a done deal. The Title 24 is very good but not ideal for

this.

Lots of discussion on fleet standards, okay. Lots of time discussing fleet standards and, you know, it's technology-neutral, it allows the marketplace to get involved with this thing. The problem is that you end up with having compact fluorescent in closets, okay, and that's a downside. It's also hard to establish. It would be hard to set up police and establish something like this.

Rebates and marketplace incentives. Lots of activity on potential on this. And it really helps mitigate the whole issue of an underground market by equalizing the cost between two technologies. This technology is a little bit more expensive and it's bought down by an incentive, it will reduce the pressure to either offshore lamps or imported lamps.

The rebate issue again comes full circle in that there is a potential there for a mixed message, okay. In that it may, it may bias people away from one technology to another. If you have an efficient incandescent and it's rebated there's going to be a story. There has to be a story. That way it's going to communicate a mixed

message. So that's a, a moving target that we're looking at now.

Tax credits is also a good idea. We do these things or had activities like this in solar and in insulation. Well why not in fixtures and the lamps? So I think that this is another potential. It's going to be tricky to police the whole issue with fraudulent claims but there is some history with this in other technology areas that we could, we could borrow from.

Of course consumer education is going to be a very important part of this thing. And I'm going to get into this when I talk about the synergistic opportunities.

Clear product labeling which will allow people to distinguish one technology from another. What is the efficacy, how long does it last, what is its cost benefit. Product labeling has always been a tricky issue but we need to go full circle on this. I'm running out of time.

I know I keep coming back to this example as one of my favorites but I think that early adoption by the state government could really, could really point the way. The state got into a large purchase, let's go relight all the

incandescent sockets that exist in California's public buildings.

And it's not just our leaders using A lamps. I've seen these in all kinds of state office buildings. I've seen this in schools, I've seen this in municipal buildings. So I think that California could be very bold about this. Let's say we're going to use next-generation lamps and make a big purchase. And I think that this could go a long way.

A wattage excise tax. You know, as you increase the wattage. And again, we're not pro or con on this thing, I'm just presenting this.

This certainly incentivizes efficiency. The funding from this could be used for programs and for efficiency and for encouraging and implementation. Of course, these things are highly unpopular.

This is not a technology. This is a way of thinking, okay, and that's why we included this in the policy. And what happens, I have come full circle on this because it becomes synergistic with the other policies.

The challenges are -- And why we're at the one, nine, and fifteen percent after many

years of very significant investment on everybody's part -- You know, I'm known as Mr. Fluorescent. I've been doing compact fluorescent for 20 years. And I have to admit that the 15 percent makes me kind of crazy.

So the idea here is the whole concept of promoting availability of a higher performance CFL. Something that has, it becomes transparent to the consumer. It's got amazing color, it lasts for five years, and, you know, will survive a dimming circuit. Will not smoke, fry or flicker.

We wanted to bring in the one that kind of made smoke but I was advised not to do that because of the sensitivity of some of the Commissioners. So I do not smoke in the room.

I pulled this out of my -- I do this whole history of lighting class at UC Davis and this is kind of an interesting quote:

> "Once they got to the point where they could shrink the fluorescent lamps, make them compact, then obviously that's the way to go rather than this."

And this is from the inventor of the halogen A

lamp. So I found this sort of historical reference kind of interesting in juxtaposition to this concept of --

Again, this is not a technology, this is a policy program kind of thing. So there's higher savings potential.

You want the CFL to become the preferred light source through major improvements in color, life and dimmability. Now there's some great technology out there but there's also technologies that are not great and that mix is hurting us.

So the super CFL program that we're calling, it has some unintended consequences. There's enormous consumer inertia in here. Historic memories are hard to overcome. I've got a warm and fuzzy on this kind of technology but lots of people don't and there's a barrier there and that needs to be addressed. I think the super policy can address that.

So I'm going to come back to this but I wanted to go real quickly through some of the implementation issues that need to be considered on this. And they're principally disposal, incremental, phasing, exemptions and misapplication. I'm going to buzz through this.

The disposal issue. California is not ready for the disposal issue. It's every second Thursday of every second month that you can take your lamps out to the dump and have it disposed of. That's fine with linears, which look kind of obtrusive sitting in the garbage can on the street. These don't look obtrusive in your garbage can, so it's a problem.

Now whether you agree or disagree with whether it's hazardous waste or not, the reality is people are throwing these things away in mass quantities. When the first lamps start expiring from our first dedicated fixture run in 2005 we're going to be in deep, toxic doo-doo. I mean, it's going to be an issue. We need to build infrastructure.

We're going to talk about this later but this is the whole concept of if there is a lamp process. Is it a one-shot application or is it incremental over the next few years. Do we wait for, you know, ten years or do we do something incremental. And again, I am not advocating either one but we need to look at this because there is an opportunity for both.

Phasing is probably one of the most

critical issues that we need to look at. And let me go through this. Phasing relates to a Title 20 rulemaking opportunity on the incandescent lamps. And the whole concept is, do we target a single wattage first and why? Targeting a single lamp. Let's say the 100 watt lamp in this process, allows the industry to gear up. Get acquainted with the technology, get production going.

It provides smooth market entry. It allows other support programs to evolve, okay. So that's what I mean by phasing, okay.

Now it gets tricky. First of all, if you have a 40, 60, 70, 100 watt and they all say -- and these are numbers, you know, that we've used. Thirty, 40, 60, 75 watt equivalent using a halogen. Some flavor of halogen technology or enhanced filament, I don't care.

This is processes, these are more efficient. It is very practical to move to the whole line here. There is a lot of potential manufacturing. There's a lot of issues, a lot of, lots of potential issues here of just doing outright the whole move, okay. It's probably impractical to push for something like that.

So let's say that we go incrementally.

And let me walk you through this, this is kind of important. If we target the 100 watt lamp and we say okay, we're going to make, we're going to make this lamp, we're going to go from 100 watts to 75 watts with halogen. Okay, we made that, made that decision, okay.

If you go into that marketplace and you do nothing this 75 watt lamp will undoubtedly be more expensive than the lamp that it replaced. And in the absence of nothing else pure, simple economics will say, I'm not going to buy that $2 lamp, I'm going to buy that 75 watt lamp down here. And assuming this one has gone away.

So yes, you have achieved the savings benefit because you have gone from 100 watts to 75 but no one is enjoying the super efficient technology here. That's an issue. So that's in the absence of nothing.

If you decide to rebate, okay, decide to rebate this and say, okay, I'm going to make this the same cost. Well then you're going to get people, okay, that actually works. People will trade up and say, I'm going to buy this one, I'll buy this one.

But you actually might pull over some of

the 60 watt bulbs because this will undoubtedly come with a great educational program saying, this is a green lamp. We've got to wrap it in something green. So people are going to, that's a green lamp. And since these all cost the same why don't I just buy the green lamp.

So the unintended consequence there is we may actually -- I don't know, it needs to be looked at but there's a real potential there.

The other opportunity here is to come after the 60. Let's say we go after the 60. In the absence of nothing, no rebate, no education, this is a more expensive lamp. People are going to go, I'm not going to buy that and I need my light. I'm not going to buy 40, I'm going to buy 75. So it's been counterproductive.

In the presence of education and rebates you get this 40 green lamp, then you might actually split the difference. You know, you might get some people going, the 40s, yeah, you know, I want to buy that green lamp. And you also might pull some of the 75 watt. This is, this is certainly not exacting but it critically needs to be looked at, otherwise we're going to have doo, deep doo.

Of course the other issue is to start at the other end of the spectrum and work upwards. This is tricky because -- This is tricky because 40 watt is not the easiest thing to do with halogen technology. It can be done but it's tricky.

Phasing is hard to predict, okay. Phasing means, how do we target this if we go out on this. Possible artificial market shifts. Something we need to be very careful about.

Exemptions.

Misapplications. I talked about this. We really need to watch out where we're bringing in new types of lighting technologies. You don't want this to be cheaper than this, you know. Because if people go into the store and they say, well you can buy a small one of these things for $1.50 or $2 and this is $2, you don't -- We need to be careful about that. Because this is -- People will do things with lamps.

Okay, proposed approaches. Again, this is the idea of taking all these things and how to do this so there's enough safety nets here. And again, working with lots of folks on this. A better/best kind of integration. And the approach

here would be, a CFL development promotion. This is a super CFL.

Again, policy. And do that in a regulatory framework for the Title 20 but done with smart phasing so we don't get these artificial kinds of things. And then back that up with a behavioral change. It will require this type of networking. This isn't coming out of Michael's head. This is coming out of a collective kind of whatever here. In order to do this right in California so that we don't have deep do you need to have this kind of, sort of integration.

First of all, the super CFL. A high performance CFL could be very successful. We already know that. The utilities are very engaged in this.

It addresses the migration of CFL to efficient incandescent. If people go, you know, I don't really like this. It flickers and hums and doesn't last very long and I hate the color. I'm going to buy one of those green lamps that California's got for us. We could see a migration. We don't want that to happen.

And of course start now to avoid the

mixed messages. We're very hot on the A lamp as a target but I would encourage insightful folks to think about this as a integration.

Two is a regulatory framework. And again, I was out kind of out in front of this when the whole ban stuff came through and, you know, they come to my lab first. And I said, look, you need to think more globally than a ban. You need to think about something technology-neutral. You know, let the industry respond. Technology-neutral. But it provides a safety net, it's a regulatory safety net for the industry. I mean, the industry wants help on this as well.

And then behavioral change. And this is important. We need to educate on this thing. These folks don't know lumens and they don't know watts. They go in and they look at a lamp and it's got a price tag on it. So I think we need to communicate this sort of better/best kind of approach.

So next steps. We are at the very beginning part of this. What we tried to do is identify where the real problems are, what the potential mixes are. I think we are in a really good position. There's lots of great technology.

And I think with some insightful policies we can get there.

Next steps. I'm very strong on stakeholder meetings. And the concept here is to work with the industry and the utilities to develop the -- one, develop the super CFL specification. We need to develop that. We have been very involved with that.

Develop the X and the Y. And the X and the Y, what is the time frame and what are the efficacy targets. We're going to have to come down to brass tacks and say, it's going to be these wattages, we're going to phase it in this way so we don't have deep doo, and what are the exemptions. I buzzed through the exemptions part because there's ways to address that.

I know I used up more of my time and I know I promised you that I would keep it -- My students usually get up and start leaving when it gets close to the hour.

PRESIDING MEMBER PFANNENSTIEL: No, actually you were great on time Michael, thank you. Excellent description of the technology. And I know that your role is to present the technology, to stay away from the cost and the

politics and all the other messy stuff in there.

But in developing the super CFL, as you're referring to it, are we close to that? Is that something that really exists in prototype but isn't really in the marketplace yet? I don't quite know where we are on that.

DR. SIMINOVITCH: I think that -- And again, I'm sure the industry folks will address that explicitly but let me do so as well. I think that there's, there's three, quick responses. Specifically on the super CFL it's going to require some remixing on the phosphors, which can be done today. I mean, you can make that thing any color of the rainbow that you want. So it's going to involve some of that.

There were some, some decisions early on in the process for tri-chromatic. You can get into multi-band phosphors. And for those that have been in my lab, I've got a 96 CRI fluorescent. Now it's a little bit less efficacious than an 80 CRI fluorescent but who cares. I know I'm not supposed to say that but you catch the drift. So the idea is that a small compromise on efficacy with something that people -- has that rich color. That's number one.

To the dimming and the long-lasting. There are manufacturers that make products that last five years and that can dim. So I'm looking -- I'm not looking at terribly sophisticated, expensive kinds of -- it's more going to be one of agreement. You know, what CRI, what kind of agreement do we want on light and the dimmability.

There are manufacturers here today that make something that lasts for five years that dims sweetly. So it's kind of we just have to agree on that and say, California is going to buy this. Because the problem is, when you go into some of the hardware places, you can buy stuff that's none of this and way low and people have nasty memories.

The other thing is on the near-term tungsten halogen, that's cost-effective. The long-term one is going to take some more time and investment. I think California is pretty close.

PRESIDING MEMBER PFANNENSTIEL: And then the other question I had was on the waste disposal. I agree that that's something we need to get an infrastructure, but it seems like a fairly easy fix.

DR. SIMINOVITCH: It's a very easy, technical fix. I went out to the dump last weekend with a whole series of four-foot lamps to do the right thing. And the nice lady said, you can't come, we are not doing this until the third Thursday. And just to remember this, you have to think of it in the months of the year.

And I'm going, wait a minute, the onslaught of the 26 watt quad tubes are starting getting towards -- You guys did it. We put quad tubes in everybody's homes. And they're going to be pulling those out and saying, what do I do with that. They're going to be taking, hopefully they'll drive out to the dump and getting the same story. Well they're going to get home and they go, this is easy, in the garbage dump, in the garbage pail. It's got to be done quick and separate from this.

I think there is another sort of -- Someone needs to pick up the phone and say, they've got the thing right there. They should have just let me go in. Look, I saw the bin, it's right there.

PRESIDING MEMBER PFANNENSTIEL: And is the disposal question -- There is kind of this

fear thing around about the excess amount of mercury if you dispose of it incorrectly or if it breaks in the home. So all of that needs to be, to be addressed.

DR. SIMINOVITCH: And again, we've been over this bridge a couple of times. And I'd ask the industry to address that a little bit. The industry has made great strides in getting that mercury down to the very smallest amount. It is certainly more than a positive tradeoff in terms of the amount of junk, the garbage bags of incandescent lamps that we've got to put in. Plus instead of having to burn coal and other. There's certainly a lot less mercury into the environment in that process. So it's a net win/win.

Now at the same side, LEDs are coming up the pipe and they're going to be starting to displace, you know, some of these kinds of applications I've shown you. There's a whole series of remarkable innovations that I'm showing you here. This is the state of the art. This is, I mean, 50, 60 lumens per watt. This is great technology and there's lots of it. We're getting little PAR lamps.

But I think the fluorescent is going to

be with us for a long time and certainly the toxic waste issue is one that needs to be addressed. I think the bigger problem here is the fact that people are throwing these things away and not disposing of them correctly. That's ten times the problem.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Questions? Art.

ASSOCIATE MEMBER ROSENFELD: Michael, I have two friendly comments. One is on the need for the super CFL. I can visualize a world in which we get to think of cheap, non-dimmable CFLs and your super, dimmable CFLs. And I just want to ask you, most of the older sockets in the existing homes, your big target, the 99 percent. A lot of those of course are not dimmable.

DR. SIMINOVITCH: It's a great question. What we found out was that pre-'05, before we required -- What we found out in production homes, dimming was generally not done. They didn't do it, okay. So there was this big, you know, let's do it dimming. Well sorry, folks, they don't put dimming into homes.

What we did find out was that when homes get renovated. In other words they do a remodel,

significant amounts of dimming gets put in at that time. It's when remodels happen lighting is the most popular. People always want more lights. And what do they do, they always put them in on a dimming circuit. So there's a large penetration factor in those older homes of dimming technologies. You are exactly right on the dimming.

And again, the roundtables address two opportunities. Is that the first one was on the super CFL. It should survive a dimming circuit. In other words, you should be able to put it on and it should survive a dimming circuit. So we're sort of somewhere in-between. In other words, it could be -- I don't want to put it on this survival, that's kind of negative, so we sort of said, dimmable.

Now you're absolutely right, some of the circuits are non-dimming and there could be two classes of technology. Agreed, we need to work that out. We need to work it out whether there's -- We've actually had another class of temperature survival and non-temperature survival. There are temperature environments in the home that generally these things don't survive well.

So we have to work out a consumer friendly classification for this so it doesn't get crazy. I know that was a long answer for a short question.

ASSOCIATE MEMBER ROSENFELD: And I have a short, friendly comment which is brought about by your aside of the Legislature.

DR. SIMINOVITCH: Yes.

ASSOCIATE MEMBER ROSENFELD: Maybe somebody in this room is going to be in Paris this summer. A couple of weeks ago I was in Notre Dame Cathedral. It is entirely lit by compact fluorescent lamps. If the very essence of gothic cathedrals can be CFLs I think you need to insert a picture of that and show it to the legislators.

DR. SIMINOVITCH: We are actually working on that now. I have those fixtures over at my lab. Actually what happened, when we were going through that as part of the CEC/DGS MOU I was up in the balcony with them. They had all the lamps on. Of course there was nobody there. And the first time I saw that building with all those A lamps on with nobody there I said, oh my God. And someone heard me and all of a sudden the lamps dimmed, they dimmed down. So we've got both

problems here. We've got an incandescent on a dimmer, you know. So we're working on that.

ASSOCIATE MEMBER ROSENFELD: So somebody get us a picture of Notre Dame Cathedral. I didn't have a camera with me that day.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Other questions? None. Thank you very much, Michael, it was great.

MR. FLAMM: We've got about seven more minutes. I was hoping to be able to have anybody in the audience make comments or anybody on the phone but I would like to limit that to those seven minutes. There will be opportunities later, maybe after the utility presentation, for some of those comments. Gary?

By the way, when you speak would you please identify yourself for our court reporter.

MR. FERNSTROM: So this is Gary Fernstrom from PG&E.

Michael, you didn't talk very much about low-voltage and low-voltage power supplies as they relate to the opportunity with halogen IR.

DR. SIMINOVITCH: I think there's, I think there's two issues there. One is that we found that generally the low-voltage applications

were in the fairly small percentages. But I think you're actually talking about the low-wattage. Reducing the voltage on this and making -- yeah.

The problem is, when you get into low wattages on incandescent lamps it becomes challenging to be able to introduce a halogen technology into this. I know Chris is going to talk a little bit about this in more detail during his presentation.

So the problem is that at the low wattages you do things with a filament that makes it technically challenging. What you can do is if you drop the voltage and get down to a 12 volt system it makes it a lot easier to use halogen technology. So one of the approaches is to take a regular lamp and convert the voltage with a small chip inside the actual lamp and make it 12 volts and then drive a small, very-high-performance halogen. And this was actually one of the earlier ideas that we had for the super halogen, was have a small conversion to 12 volts.

But that, of course, requires some costs and some expense and everything. But I think that the idea of having a smart chip in here or some kind of chip technology that would convert the 120

to low voltage for halogen is potentially a good approach. Chris I know is going to talk about that a little bit and I know the industry will as well. That's one approach. It's not going to be cheap, you know. It's not 25 cents, you know. But it's definitely that could be done.

We had actually looked at that for our high-performance down lights and actually using -- because you can get into 60 lumens per watt, into that region. Tungsten starts melting at around that temperature but you can get very-high-performance lamps. And I think, I think we're going to keep pushing the boundaries on incandescent. It's a good point.

MR. FLAMM: Yes. Please come up to the podium right there on the corner of the table. Introduce yourself, please.

MR. GREENBURG: Hi, I'm Richard Greenburg with Southern California Edison.

One of the barriers that we're finding with trying to move towards the super CFL in terms of dimmability is there doesn't seem to be a standardized test for dimmable CFLs. For example, ENERGY STAR uses the same test as for other CFLs and tests the dimmables at full power, at full

light output at all times. So my question is, what do you see in terms of that area, the kind of infrastructure that would be needed to show the efficacy and the durability of a dimmable CFL for our purposes here?

DR. SIMINOVITCH: That's a great question. The whole specification of the super CFL is not going to be a trivial exercise and needs to be undertaken. That's why I said, we need to start that now to get the dialogue going.

First of all there needs to be agreement on what we want here. Because dimmable and survivable are two different issues and can be addressed from two different cost structures.

The other issue is the heat and non-heat. There's very different, you know. There are manufacturers of compact fluorescent lamps that have put a lot of time and energy into making these things survivable and others that have not. They, of course, enjoy a much better cost structure so you see them in the six-packs and ten-packs, et cetera. So we need to come to agreement on that.

And then once we have agreed that what we actually want to have is a super CFL then we

need to get into some kind of deal about, how do we test for that? What is the protocol for that? So I'm a big advocate for let's do it straight simple. You know, I'm thinking color, dimmable, five-year lifetime. Then you're out of the deal. And then let's figure out a way of -- And the industry, we should ask them, you know.

So is it two tier? Let's agree on what people want. And I have been working with all of the folks here, the utility folks here on this. What do people want? How do we dress this? And then, how do we communicate that to the consumer and how do we test for it?

Then you have, what is its national implications of this? You can't have every state having its own CFL deal, you know. You'll get, New York and Washington saying -- We need to have some commonality on this, some agreement.

Certainly the problems are common here. We're challenged with very inexpensive technologies. We're really challenged with it.

MR. FLAMM: Okay. I suggest at this time we move on. For anybody on the phone that's hanging on, there will be an opportunity after this next group.

DR. SIMINOVITCH: Can Noah ask one question?

MR. FLAMM: Noah wants to ask --

DR. SIMINOVITCH: Noah. It's okay.

MR. FLAMM: Noah will wait. Okay, thank you, Noah.

The next presentation will be by the lamp manufacturers. So I would like to introduce Pam Horner from Osram Sylvania, Joseph Howley from GE and Dale Work from Philips. And we just had in a late flight who spent all night getting here, Petra from NEMA just came stumbling in. Welcome Petra, and I hope you're awake. So I'd like to turn this over at this time to the manufacturers.

MS. HORNER: My name is Pam Horner, I'm with Osram Sylvania, and I would like to introduce my other two industry panel colleagues. Joe, maybe you can introduce yourself.

MR. HOWLEY: Yes, good morning everyone. I am Joe Howley, manager of industry relations for GE Lighting.

MR. WORK: And I am Dale Work with Philips. I am in Washington DC, the government relations office.

MS. HORNER: While we're getting the

slides up there. They do begin with the acronym, CEC. That would be ours, Gary.

MR. FLAMM: This one right here.

MS. HORNER: Great, thank you. I'd like to make a couple of introductory remarks. I had a rather witty introduction but with two hours sleep in the last 36 hours I also had trouble getting here so the wit is gone.

I did however, in an attempt to get ready for this morning, go to my hotel room and turn on the lights by the mirror. They were compact fluorescent you'll be happy to know. But as I was applying my makeup, and my Visine, the left one went out. It sputtered and smoked and extinguished. So if anyone is taking any pictures please take pictures of the right side of my face today. (Laughter).

Again, as Michael did, we would like to thank you very, very much for inviting us. This is fantastic. We have I think a growing, excellent relationship with the CEC and we really appreciate your including us in this workshop.

A couple of points before we go through the slides here. The three lamp manufacturers that are represented here today are I guess

sometimes known as the big three. But as we start to move into different kinds of technologies through time there will be many other players. So we essentially have put together something that speaks for the three lamp companies here today but there are perhaps perspectives that are not represented. So I wanted to make that clear as we move into the future.

The second point of introduction is that I hope everyone here understands, we certainly are taking a very positive view of the industry that we love and have been part of for so long. We really do bring light to, and visibility to everyone. So imagine us, please, wearing white hats today.

Also Michael's slides were fabulous. I don't know about my two colleagues here but I am particularly intrigued by the super CFL and I do have a couple of comments on the dimmability. I was able to investigate prior to coming here that I think will help explain some things.

Now Tim has asked us five questions so these slides answer them. It's very straightforward. These five questions were the following: Please provide your perspective on new

lighting standards nationally, in California and other states.

Prospective new international lighting standards. We've only included one, for the EU, as a comparator because we noticed that others on the panel this afternoon will be addressing other international standards.

The third was prospective improvements in incandescent lighting technology. That's really combined with what the heck are we working on.

And what plans -- The fourth one was, what plans do we have to meet the 2008 standards.

And then fifth, our perspectives on consumer responses or need for education about changes in these lighting technologies. So a very straightforward presentation.

Now I will say, I got -- I'm working on two hours sleep. I put this together on behalf of my colleagues here. I'm going to present most of it so they get to answer the questions (laughter). Okay. Is that a deal, guys?

MR. HOWLEY: That's a deal.

MS. HORNER: Okay. If we could move to the second slide, please. The first question had

to do with state legislation and our particular perspective on it. So I am going to do some very dense slides. I am going to consult my watch here. It's 10:20 and we have until 11:15 so we will certainly be within that time. Next, please.

What we have is some very dense text. I don't believe in dense text but we're doing it to make a point. There's a lot going on in state legislation right now, especially beginning this past January in the various state legislatures.

Just for the record, we toyed between do you put this up here. I mean, we're in California, we all know this is going on. But I think for the record it's good to have what the key points of the two main pieces of California legislation were. And just for notes to self and cue card, in red we tried to put the current status so that you would, so it's a little more visible.

So the first one, of course, is AB 722, which we call the Levine bill. This was initially a ban of a particular type of technology. Basically general service incandescent lamps, which were defined. But then it was amended in May. And the most recent -- It was modified to

become a form of performance standard.

By the way, you will notice as we go through this we are not really making judgment. This is fact and this is, you know, where it stands and we will give perspective in a moment.

Per what Michael just said, technology-neutral standards rather than bans is something that I know the three lamp companies sitting here, and all of the NEMA companies by the way, do endorse. So for whatever reasons, I don't pretend to even know, the status of that particular bill is that it was pulled on June 8 and so is no longer, shall we say, on the floor or on the table or whatever part of the residence you want to name.

The other bill in play of course, is AB 1099, which is Huffman's bill. We note here that it did pass the Assembly. And I have put in bold at the bottom here what the key elements of energy efficiency are relative to the incandescent lighting, how it relates to incandescent lighting. And that is, to reduce statewide electrical energy consumption by 50 percent for indoor residential lighting.

One key thing for the Commissioners is

to note that the three lamp companies sitting here on this panel are on public record as supporting this bill. So that is a matter of public record.

There is still an environmental element having to do with what was just discussed. What do we do about the disposal issue in the future. And we have all agreed to work up language. I am going to try to present some of that on behalf of our industry this afternoon. To see how we can work together to do some pilot projects to get this done. So that's the perspective on those two. Next please.

I'm sorry, brain cells go. A very important point is that Mr. Huffman's bill turns over the responsibility to the California Energy Commission, as you well know, to get that done with performance standards. So that was another element of agreement of the companies that are sitting here. We agree with that and have openly and publicly stated that we believe that is where that authority belongs.

In other states, a mishmash. You see that all the ones named here on this page, it's an attempt to be in alphabetical order. So you have some Connecticut stuff that pretty much goes

through doing studies, creating lists of lamps. Then prohibiting retailers and wholesalers from selling the lamps that are on the list and creating penalties for each sale.

We also start to begin to see surcharges on incandescent lamps or least efficient lamp products, presumably to discourage their use. In Connecticut it was proposed at a ten cent per lamp surcharge. In Minnesota a 25 cent per lamp. And then in Nevada -- All of those have either died or adjourned without action.

Nevada just passed, which you may have heard, which was -- this is a moving target. It's interesting to try to do any presentations on this subject today because it changes literally every moment. As I am fond of saying, the federal legislation is changing by the minute and the states are changing by the hour.

Nevada did have a bill signed by the Governor on June 14 that requires all, something called general purpose lights. Those are generally defined but they sweep into the definition, every lamp that is used for general illumination, including fluorescent and others' that are federally regulated. They exclude

specialty lights but do not define them.

Our perspective, if you want to know, on that particular bill is that we think there will probably be confusion and difficulty in interpreting what general purpose means. And we also have done a side-by-side comparison. This is really Jared Huffman's original bill but without later amendments. Next slide, please.

New Jersey, more of the same. This was a mandate that general service incandescent lamps, which were defined, shall no longer be sold. This was referred to a committee.

And in New York. We did an update yesterday on this one. The first bill, AB 7944, was a ban of lamps rated between 25 and 150. They held a hearing on this. We haven't heard an outcome on that hearing, although several people, I think maybe in this room even, were there at the hearing.

But in the meantime a new bill was introduced on June 13 that proposes that the president of NYSERDA establish energy efficiency performance standards for these particular products. We haven't had time to analyze that. I guess it would be sort of commensurate with the

idea of putting this in the hands of a state regulatory group that would then set energy performance standards.

Moving to North Carolina. Once again, these are all a collection of states that either prohibit the sale or were thinking about studies that would prohibit the sale of these particular types of lamps. It was originally a ban bill but then changed to a study bill.

South Carolina has been referred to committee.

Rhode Island was essentially the same language as Assemblyman Levine's bill in California but that's been held for further study, just to let you know.

So I think you can see that in terms of banning, in terms of study, and in terms of, shall I say support for technology-neutral standards, I think it is clear where the industry stands on that issue. And it would hold up state by state. If any more come on you know where we stand. Next.

There also are a number of states which have not directly gone for a residential ban on these types of light sources but rather -- and it

isn't pertinent perhaps to today's topic but I did want to include this one slide because it relates to the incandescent type. And that is a walk the talk kind of bill. If we're going to be dealing with energy efficiency in lighting we should do so in our own state facilities. So you see here a litany or a list of different states that have approved a move toward more efficient lighting technologies in their own facilities.

And we haven't discussed this, Joe and Dale, but I know from our company's perspective we totally support that kind of an approach.

And finally we wanted you to have this on record in writing. So what you have is this collection of state proposals that began in January. NEMA, the National Electrical Manufacturers Association, the three companies here only being 3 of 15 members of the lamp section. We are the equivalent -- I put this because in a moment I am going to talk about Europe. So we're the equivalent, the US equivalent to a group called the European Lamp Company Federation. So it's a similar type thing and when I compare you'll need to know what I'm talking about.

In April we issued a press release which has not, our position has not strayed from this since that date and that is that we do support public policies that will transform the US market to more energy efficient lighting within a decade.

We also call, and this is openly known. We call for a federal solution that would avoid confusion in the marketplace.

We listed six principles which I have combined into four for simplicity here and that is to transform the market in an orderly manner beginning with the least efficient type incandescent lamps, A line, 40 through 100 watt, and naming the four types.

Our belief in the use of technology-neutral performance standards. Again to repeat, the transformation of a market within a decade.

And I am going to insert sort of my own sidebar here for your note-taking pleasure. A transformation for this industry in the United States involves two parts. It involves not only a phasing in or an introduction and commercialization of brand new technologies, it also involves a phasing out or stepping down of old. So it's a complex but sort of two

directional issue with which we are dealing and I wanted everyone here to appreciate that fact.

We also have agreed that we wish to begin with strategies that will save the most energy. I think that's enough said on that, I'd like to move to the next points.

Tim, you had asked us to I guess educate the group on a couple of things and this is the one that is changing by the minute. So I have to plead ignorance on what's happening on the US congressional floor right now, I don't know.

But if we move to the next slide what you are going to see here is sense text and then you're going to see something that addresses the red. All this slide says is that the senate bill formerly called S1115, now it's changed to S1419, being proposed right now, discussed right now, has six different titles to it.

This isn't just a lighting bill. Lighting is an important portion of it. And again it addresses lamp efficiency standards, it also has an awards program, et cetera, which I'll go into in a moment. But the point here is, especially for the three of us sitting here, I know I can speak for myself, I get bewildered by

some of this federal legislative stuff. You know, I'm a light bulb person. But anyway.

The lighting is, shall we say included in amongst many other issues. I mean, this bill is not going to just address lighting. So it's going to address renewable energy, automobiles, CAFE standards, all of that sort of thing. So I wanted you to know that.

If you move to the next slide, however, at the moment these are the -- The first three bullets are what is contained in this as of the last minute that I knew. There were three. I think all of which will affect residences in California. One of them is incandescent reflector lamps. You were the leaders in this. You were the first to come up with standards to be incorporated into Title 20. And what we promised you that we would do is to make this federal. And therefore the industry, you want our perspective, we encouraged the federal government to try to find a way to make that uniform across the states. So this is the California standard, making it federal on incandescent reflector lamps.

The second one has to do with LEDs. I bring this up just not because it is in this bill

but this is an incentive approach to help manufacturers move more quickly toward a solid state lighting solution to higher efficacy.

I should say, again, all of the lamp manufacturers in the audience here or in the room today I think make all of these kinds of technologies and we're very excited about this kind of an incentive program to move us even more quickly toward this white LED future. You see here what the prizes are, proposed.

And then general service incandescent lamps. At the moment, again, I have no idea. It was placeholder language that says basically it should be more efficient, have a nice day. So we'll see what the policy folks are doing on that when we get reported. I think tomorrow we should have more information.

ASSOCIATE MEMBER GEESMAN: If the industry has supported a 50 percent improvement over ten years in the Huffman bill is that the same position you're putting forward in Congress?

MS. HORNER: No. I will show you what we have proposed as an efficacy standard. And then I will make a comment that there are scenarios -- Let me make it now. There are

scenarios that we have done that would achieve that. I guess indirectly the answer is yes.

ASSOCIATE MEMBER GEESMAN: Why would you support one target in California and a different target or a more lax target in Washington?

MS. HORNER: Well there are two different approaches. One is -- If I may defer. Let me show you that we would do a particular -- we've jumped ahead is perhaps a better way to put it. To an approach that would achieve the 50 percent. We've gone along with the fact in California that it should be thrown to the California Energy Commission to help work on performance standards but we have already put forward a suggested set of performance standards that would accomplish the goal. Does that clarify?

ASSOCIATE MEMBER GEESMAN: It does but it does in my mind raise a certain aura of doubt as to whether 50 percent then is the right number in the Huffman bill. You know, our process, and I know the one in the Legislature, relies on the best possible advice that we can get from you and other stakeholders.

MS. HORNER: Right. Well I will reveal

some percentages when I get to our chart for you. It may help.

You see the timing here. So the latest version of that particular Senate bill. It was introduced on June 12, it had debate the same day. We don't know. The goal of the Senate is to have something decided by July 4, Independence Day.

If we now move to the next slide there is a similar bill moving through the house. The sponsors are Dingell from Michigan and Boucher from Virginia. This has three titles, not six, and lighting is one portion of Title I. So it talks about appliance efficiencies, building efficiencies, et cetera.

And then if you move to the next slide you will see the lighting portion. The first one is general service incandescent lamps. This is what we're calling placeholder language because we have been told it is placeholder language. This particular language is from Jane Harman. She had her own bill originally but now a portion of it resides within this particular bill that would -- again my memory is gone with two hours sleep. This was the 60, 90 and 120 lumens per watt progressive standard for all general service type

lamps.

Incandescent reflector lamps, the same as mentioned prior.

And then the use of energy efficient lighting and bulbs. This is a federal government thing, not a residential.

And the timing you see in here, it's still subcommittee but working quickly. I learned this morning this is going to be marked up tomorrow. Again they desire a July 4 completion.

All right. Now to combine the EU -- excuse me, the perspective on international, which Tim asked us, and what we might propose. We have put together a series of three slides.

The first is the next one here. This is what the industry can do. If you remember the statement that I said, this is for our particular industry in the United States. We have a phasing out procedure for an old technology; we have a phasing in of new.

What you see at the top, let me walk you through this please. What you see in yellow at the top are the general service or medium screw base, basic light bulbs that are of the clear, frost and soft white. We've lumped them together.

Taking and building on the California 2008 approach. In a moment you're going to see it is very different from the way Europe is approaching this. This is to take a lumen range, we might call it a lumen bin. And that is to examine what on the left, that would be the common wattage that the homeowner, the residential user today would know as a standard light bulb wattage. What are the lumen ranges available of all of these types given various lifetimes, et cetera.

And Michael, if you recall from his slide, it wasn't a proposal, it was a factual statement. If we could put a -- He did some comparisons. And in that next column, that third column, do you recall that he had 75 watts there? Okay. It's sort of a what-if scenario. We could reduce wattage by X percent. What could it become given the technology capabilities that we know today? I hope you're with me so far.

What industry has done is proposed a five percent lower than that so that's why 72. It's not 72 to be ornery, it's 75, okay. But what if we went even stricter, even five percent stricter. So that's a new wattage cap of 72 would be what we would propose and what we believe we

could do.

So let me finish the lumen bin wattage cap approach. And you can move across. Seventy-five would become 53 in the new world, 60 would become 43 max in the new world, and 40 would become 29.

PRESIDING MEMBER PFANNENSTIEL: Pam, let me interrupt just to understand. Does this get you to Huffman?

MS. HORNER: I'm sorry?

PRESIDING MEMBER PFANNENSTIEL: Does this get you to a 50 percent reduction in residential?

MS. HORNER: And that's what you want to know. I have done probably ten scenarios myself. Dale, I don't know, you might want to comment on this.

PRESIDING MEMBER PFANNENSTIEL: Dale or Joe, have you done the calculations?

MS. HORNER: I have done, I have done calculations that show we can get to between -- again, assumptions. Everything is based on assumptions. What will the public do?

PRESIDING MEMBER PFANNENSTIEL: But if these become the standards --

MS. HORNER: The answer is yes. The answer is yes. I found --

PRESIDING MEMBER PFANNENSTIEL: So these standards?

MS. HORNER: Yes.

MR. HOWLEY: It's a combination, 50 percent of residential energy in lighting. Or 50 percent of the lighting energy in residential applications is the goal. We recognize that compact fluorescent lamps are being used more and more in the residential sector. We also have a potential for other sources to be developed along with this, which would serve the incandescent part of that market. The sum total of all these technologies would get you to 50 percent reduction of technologies, giving the consumer choices.

But with the remaining part that is still incandescent, and increasing the efficiency, we believe in just about any of our scenarios would get to a 50 percent reduction in total residential. This being part of the solution.

MS. HORNER: And one of my particular scenarios, even showing sort of a lag in -- call it -- we have a term for it in our industry called, the pantry effect. Buying ahead and then

stuffing your pantry full of other, older lamps.

PRESIDING MEMBER PFANNENSTIEL: This is, in essence, where we already are or have agreed to go and this is where Huffman is.

MS. HORNER: I don't know that Assemblyman Huffman, he may know about this but I haven't particularly, I haven't spoken to him about it. This is what we have proposed federally.

ASSOCIATE MEMBER GEESMAN: And you suggested virtually any of your scenarios would achieve this 50 percent target.

MS. HORNER: No, I have -- I can create some that are very pessimistic. But I can create more that show between 50 and 60 percent energy savings.

ASSOCIATE MEMBER GEESMAN: I guess I'm trying to figure out, is this a stretch goal or is this a get off the couch and do a pushup once every two weeks goal.

MR. HOWLEY: This is clearly a stretch goal given that perhaps the five watt reduction that we are going to put in place in 2008 was relatively simple compared to what we are proposing here, which is extremely difficult to

do. But all of our companies are willing to roll up our sleeves and attempt to do this.

MS. HORNER: Well let me also give you another number that will help you. One of the scenarios I worked out has a premise that approximately 25 percent of the residential users would -- residential sockets would still have a high efficiency, halogen or new incandescent-type equivalent in their sockets. Perhaps as much as 75 percent with CFLs. You can achieve roughly a 60 percent energy savings in that residential sector. That's what that would do.

MR. HOWLEY: This would require a much higher penetration of CFL use, which we have yet to get to. So we'll have work to do there as well as some very advanced technologies on incandescent. Our view is that this is a stretch goal. And it will be difficult to achieve but it is achievable.

MS. HORNER: Doable.

ASSOCIATE MEMBER GEESMAN: How would you accomplish the higher penetration of CFLs?

MR. WORK: I think there could be a number of ways that that's done. But one way that we anticipate, an important driver today is that,

at least in our opinion, we don't set the prices of these products in the market, the retailers do. We think that these replacement lamps with the efficacies you see reflected on this table would be more expensive than CFLs. So it could be an economic driver to CFLs.

MS. HORNER: We would imagine that at some time in the very near future the least expensive lamp on the shelf will be a compact fluorescent.

MR. WORK: I would also add two things. First, I have done scenarios independently from him but when we compare our numbers we get almost identical numbers. So we also show more than, slightly more than 50 percent savings by our best guess as to how the market would segment. We don't know how the market will segment.

But I will also add that the numbers you see reflected on these tables are not what you call one pushup every two weeks. These cannot be accomplished by traditional or even mildly expending the best technology. Incandescent lamps as we know them today cannot meet what is on this table, even with a stretch.

MS. HORNER: The standard halogen can't

meet them.

ASSOCIATE MEMBER GEESMAN: Does that then relate to your suggested retirement scenario of existing products?

MS. HORNER: I'm sorry, I almost made a flip response. I'm hoping to retire soon. (Laughter) Yes.

ASSOCIATE MEMBER GEESMAN: And would that be a regulation-driven retirement or something that the manufacturers did on their own?

MS. HORNER: I think regulations are critical in this role, absolutely critical. The market doesn't work, won't do it. Your introductory remarks were right on.

The blue on this slide then shows the same, with the same wattage caps, but with different lumen ranges. Acknowledging that modified spectrum-type lamps, which currently California exempts, what the industry is acknowledging is that if you didn't include they will become the default. So you have to include them. And so using certain known principles of physics there is a 25 percent reduction using certain types of technology to take the yellow out, basically, out of the spectrum. So that's

what these lumen ranges affect.

Now the effective dates, we can answer questions on this but I'd like to read a statement. First of all, the effective dates are what industry can do. And for the lamp companies a phased approach, which is what you see here, is critical to the success of this kind of market transformation.

What we would propose to do is to start where the energy savings opportunities are the greatest and for the bulbs that are the most widely used. And that's the ones you see here.

We are mindful, however, that the market shift will require an extensive public education effort. We're going to get to that in the end. This is where we really need your help, folks, by both the public and the private sector.

And this shift also must take into account the impact on US industry to write off capital equipment costs, packaging costs -- packaging machinery costs, excuse me. To construct lamp-making equipment that is new and to re-purpose old equipment for the newer, higher efficiency product production. And to prepare for extensive work force adjustments. I know from

speaking for my company I have five plants in the United States that are affected by this. Next slide, please.

The gentleman who will present on the European situation may have a similar slide to this. I show this to demonstrate to you that for -- and this is -- The European approach is definitely aimed at the residential sector but using minimum LPW, minimum lumens per watt.

What we have found so attractive about the California approach in your 2008 standards, and we continue to stick by it, is that one could, one could with LPW-only standards, continue to get brighter and brighter bulbs but of the familiar and higher wattages. But once you place a wattage cap, which California has done and which the industry likes that idea, then you now have the energy savings potential because you have taken out the higher wattages one by one.

So I put this up here to demonstrate not only where they are -- Now do realize one other technical issue. When you look at lumens per watt standards in the EU, primarily this is 220 volt operation. Depending on the wattage there could be a 25 percent difference in efficacy because 220

volt operation requires different materials and operates them at lower efficacy. So where these may look low compared to what Michael had shown, 120 volt operation in the United States is already much higher just due to mains voltage.

The next slide, please, demonstrates something, and I think -- I'm going to guess that the item of the most interest to you, if you are interested in comparing the new residential world of lighting with what we can think about doing here in the US versus what has already been proposed in Europe, what the blue and the yellow show is simply timing. There is no shall we say amount of how many light bulbs are affected kind of factor in the blue and yellow there, it's timing. Proposed. Timing. Proposed.

From my standpoint the most interesting is the bottom three lines of that table. If you take a look in Europe at what percentage in units, and this is straight from the ELC, whom I mentioned is the equivalent of NEMA, lamp section. What you see is the greater than 100 watt category is one percent of unit sales in Europe, just like it is here.

But what is markedly different is that

even though they are beginning in the same order we are, which is the 100. And they have combined the 100 and 75 watt together. Those two wattages together in Europe today, in the general service incandescent lamp category, what they call GSL, is 15 percent of the units sold. In the United States those two combined are 40 percent.

And I think you can begin to see if just for a minute you put on your lamp industry moccasins and walk a mile in our moccasins on this issue, we're dealing with 40 percent of what we make. And then you get to probably the most interesting, which is the very, very low wattages in Europe even though they are not even nearly as bright as our equivalents. They are very energy-minded and lower wattage.

According to our global contacts here, even though they are getting lower wattage -- excuse me, lower light output, a lot of European households have voluntarily gone to these lower types, lower wattage types. Hence nearly 50 percent of their market is in that 40 watt to 25 watt. We thought you find that interesting and helpful as we move towards standards here. Next.

All right, I have one slide. We have 20

minutes I show. Next please.

In the category of Tim's question about improvements in incandescent lighting technology each lamp company may want to address what they're doing. May or may not, I don't know. But one thing that came up at the last workshop had to do with when you were considering the standards that have now become Title 20, 2008. We all talked about Krypton. We remember those conversations.

Well what our company has done is we have gone ahead and done a very carefully prepared study that will become a white -- a paper published through the Illuminating Engineering Society. I have only extracted one graph for you to update you.

What we had said at that time was that in the, let's call it the 60 to 100 watt category, which is the biggie. How do you make these things more efficient? Krypton certainly is a way to do it. But was the older paper that was published many years ago right or wrong? And it bore redoing an experiment that was very, very rigorous. You'll see numbers ad nauseam from me if you'd like them but this is the summary.

If you take a look at it we had said

that if you add krypton to a lamp, yeah, you're going to get some improvements in how efficient it is, but ten percent -- We could only find ten percent improvement at the very, very lowest wattages with the maximum fill. Generally speaking you're talking about three to six percent. So that's an update for you on a study that will become a technical paper in the Illuminating Engineering Society.

Finally. Not finally, next finally. Next slide, please. You wanted to know from us briefly what each of us plans to do for the 2008 standards. So since I'm talking I get to go first. What I have in orange on the left are the standards. Which I picked soft white. Again you see the familiar approach of lumen ranges with maximum wattages. So in ascending order, the 38 instead of 40, 57 instead of 60, et cetera. And you see them compared with the white.

Now I am going to take off my industry hat and I am going to wear my Sylvania hat for about three minutes. You want to know what we're doing. Okay, our company, in the yellow, we're a double life company. We led the market. We found that our residential customers cared more about

life than light. We're double life, we have been double life, we've led the market. Our customers in numerous focus groups have found that double life light output is fine. They like it, it's okay, this is what we know. So in our world that is our comparitor when designing a new product.

So I guess I want to make just a couple of points about this box I'm rattling here. The product that you will see introduced into California, and where we do we'll ask for help in the end, is called Elogic. It has the same wattages that you show as a wattage cap. But we did that in order to get a longer life product. It's 50 percent longer than normal because we're a long-life lamp company.

In the two higher wattages we have put in an 88 percent krypton fill in order to achieve the efficacy and the lumens that are required. Ultimately what this translates to is, over the range it's about a -- in bulk here it's about a two percent difference in light output from the standard we set ourselves to achieve, which is against double-life.

Why did we do this? Well this bulb is an A-17 so it's 30 percent less material. What we

have done is we brought our German colleagues in and we have used your standard to help us learn how to take lead out of the glass in the stem press of the incandescent bulb because we're anticipating the California RoHS standards.

I don't know if all those acronyms make any sense but we see it coming. We see that environment and energy are inextricably related and so we used this standard as a way, as a first step to help us understand how to move toward a lead-free product, which is what we've achieved here. And a 30 percent smaller size, which has all the associated lower weight, lower CO2 emissions, lower transportation costs, et cetera.

So that is the approach we're taking for the new product. In the meantime we have two things. We're combining a compact fluorescent strategy with this one under the same name because we don't think you can just market this. If you want consumer choice and you want a mix then you have to market it all. So this isn't stand-alone.

And then the final point is that in the meantime we are also working toward an IR film technology that will increase our halogen products to the levels shown in the previous slides.

The end. Joe, what are you doing?

MR. HOWLEY: Excellent question.

ASSOCIATE MEMBER ROSENFELD: Pam?

MS. HORNER: Yes.

ASSOCIATE MEMBER ROSENFELD: I probably wasn't paying attention. Were you saying on your last slide that you propose to market both the regular life and the long-life? I'm sorry, I just wasn't clear.

MS. HORNER: What we -- There are two things. If there is a product like the old 52 watt incandescent lamp, which is a standard life that meets those, you're going to find them in the California market. Are we going to market them and promote them? No.

PRESIDING MEMBER PFANNENSTIEL: So Joe, what is Ecoimagination going to do with this?

MR. HOWLEY: Thanks, Jackie. And Pam, thank you for presenting the industry information. As we were all going over our responses to this we realized you probably did not like to hear the same presentation three times from us so we thought we'd only give it once.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. HOWLEY: With a small follow-on of what we are planning on doing. GE is also planning on coming out with products starting in 2008 that will be either reduced wattage products at the wattage levels similar to, or the same I guess, as Osram, which would be 95 watts, 71 watts, 57 watts and 38 watts. So there will be some consistency there for the consumer. At least between our two companies. I haven't heard from Dale yet.

I do not have information yet on exactly what those lumen levels are. I know we were trying to maintain the lumen levels. But they certainly will be within a range that is not perceptible to the consumer, which typically the consumer cannot perceive the difference at ten percent. These are certainly closer than that.

I do not know if they are going to be able to maintain the same light levels or not. I do know they are working on some fill gas changes and some filament changes to address these issues. I don't have fine data on that.

I will also say that in our strategy as a company in general, Ecoimagination is to provide several options for consumers over the next few

years, one of them being compact fluorescent. We continue to work aggressively to market and promote those products. We are working on halogen products. We are working on LED productions through our illuminations group.

And finally, we are working on higher efficiency incandescent products. And we have some technologies in our laboratories that we are developing right now. I can't share much more about those although we hope to bring some of these more advanced incandescent technologies to the marketplace in the next three years or so in a limited fashion and then higher production levels beyond that. Which is why you hear those dates being talked about at the federal level.

We have large volumes of products that we make here in the United States, very large incandescent lamps plants, that we would need to ramp down or convert at the same time while ramping up these other technologies, including compact fluorescent.

So this is a massive issue for the lamp companies to make this conversion. The industry has existed for over 100 years making the products they're making today. And we are, we are talking

about totally reinventing ourselves in the next five to ten years, which is no easy task at all to do. But given global climate change, world issues, all the things happening on our end, and our new Ecoimagination mindset with GE, it is a challenge we are willing to take on.

PRESIDING MEMBER PFANNENSTIEL: Joe, does GE manufacture any CFLs?

MS. HORNER: Yes, we manufacture CFLs. Are you talking about a location or just --

PRESIDING MEMBER PFANNENSTIEL: That was the first question. The second question, I assume you do so offshore and not in the US.

MS. HORNER: Yes. We have looked at manufacturing in the United States. The economics are very difficult given the competitive nature of the compact fluorescent market. And as such we, as well as all of our competitors, pretty much manufacture these overseas in lower labor cost countries.

PRESIDING MEMBER PFANNENSTIEL: Does GE have a preference between the sales of CFLs or incandescents just in terms of both manufacturing cost and profitability?

MS. HORNER: We try to manufacture and

sell both products to be profitable, of course. I think the preference question is one where we don't feel we have control over. The consumer will decide what product to use. We have product teams focused on incandescent, we have product teams focused on CFL. They both essentially compete with one another, both for the same socket trying to sell their products.

PRESIDING MEMBER PFANNENSTIEL: And about what percent of your sales in the US is incandescent compared to CFLs?

MS. HORNER: I think the industry numbers that you heard from Michael, we are very representative of those as the largest consumer lamp provider in the States.

PRESIDING MEMBER PFANNENSTIEL: Well, but we heard California numbers, I think, and I'm not sure of the US. Does anybody have an idea of what the US comparable number would be? We can get to it later then if others might have it.

MR. HOWLEY: The US has also been seeing a dramatic increase in sales of CFLs in general across the whole United States, I think primarily driven this year through the massive media coverage on this issue. It has been truly

amazing. You can hardly turn on a television program where somebody is not talking about, as an example, what a consumer can do switching to a compact fluorescent lamp.

PRESIDING MEMBER PFANNENSTIEL: So I assume then the GE marketing department is equally promoting that. I mean, you're spending as much in promoting CFLs as you are incandescents. If you say there really is no preference, it's a consumer preference.

MR. HOWLEY: Yes, we are promoting both of them aggressively. We market all of our products as ENERGY STAR products on the compact fluorescent side. We have won several awards from the US EPA for the promotion of these products. We do aggressively market compact fluorescent lamps. Our current marketing revolves around the concept of energy choice and we have -- we packaged and we promoted these products very aggressively in the last few years and they're doing very well through our major retail accounts. Extremely well.

ASSOCIATE MEMBER GEESMAN: As you go about reinventing yourselves over the next five to ten years have you set efficiency improvement

goals for your slate of products?

MS. HORNER: Every department continually tries to improve the efficiency to the highest extent feasible, possible, while being economically justified. Something that has come up, the super-efficient LED source but they cost $100. Nobody will purchase that. So we continue to look at the tradeoffs in economics.

But I don't say that there's specific goals other than the researchers. The product teams, they know that that is a big issue, energy efficiency. They continue to try to improve energy efficiency to win in the marketplace. It's what they need to do to win long-term in the marketplace.

ASSOCIATE MEMBER GEESMAN: I'm trying to get some context for this 50 percent Huffman goal over the course of ten years. And certainly from the scenarios that Pam presented it would appear that the industry's common perspective is that you may be able to improve upon that.

Knowing the emphasis that your management has placed on reinventing yourselves I'm wondering if GE is going to be on the leading edge of that and it's going to be the other

laggards among your competitors that pull the improvements down to 50 percent. Or if you've got some type of internal goals for your product slate that you'd care to share with us.

MS. HORNER: It's hard to say where we're going to end up. Certainly our goal is to lead and to lead with energy-efficient products. And we are working aggressively within our research and development groups to produce new, efficient, incandescent technologies. So we certainly hope we'll be in a leadership position.

But the market has to work effectively by all manufacturers and we need to provide a platform that works and effectively allows the market to transform itself in a rational way. We have to allow time for these conversions to take place.

The overall premise for the 50 percent is that as the regulations come into place and the inexpensive lamps go away and are replaced with energy-efficient LED, CFL, incandescent, they all are at higher price points. Once that happens many people will choose CFL because of its long life and at no greater cost than incandescent. But still others will choose incandescent because

it still provides sparkle, it's dimmable, the color quality is -- They have a unique color quality that's hard to match. We will then be providing the consumer a choice.

But if all their choices are energy-efficient that's a scenario in which you have this energy savings. CFL perhaps providing the 70, 75 percent energy savings, perhaps the incandescent providing the 30 percent. Perhaps LED coming in providing some other percentage. But the combination of all these technologies working effectively and efficiently provide the 50 percent overall goal. We think it is a very aggressive goal but it is a very doable goal to try to set in place, to try to achieve.

ASSOCIATE MEMBER GEESMAN: Thank you.

MR. HOWLEY: I'll turn it over to Dale.

MR. WORK: Thanks, Joe.

MR. FLAMM: It is my understanding there may be a lamp manufacturer online on the phone who may want to make a few comments. Are you done?

PRESIDING MEMBER PFANNENSTIEL: I'd like to finish with the panel first.

MR. FLAMM: Okay.

PRESIDING MEMBER PFANNENSTIEL: I think

Dale has yet to speak.

MR. FLAMM: I apologize.

MR. WORK: I'll be brief. As we look to California in January of 2008 we really are taking two product tracks, two very different product tracks. The one in which we expend by far the most effort is in fact to have a high-quality and probably the most costly, I think compared to what we anticipate will be in market.

And that is in fact a halogen lamp in an incandescent bulb, if I can use that term. It will be much more efficient, about 40 percent more efficient than today's incandescent lamp. And we anticipate substituting a 60 watt lamp with a 40 watt lamp, a 75 watt lamp with a 50 watt and a 100 watt lamp with a 70 watt lamp. And this, of course, is very much in line with what we see long-term, even with the phase-out.

I cannot say that we are optimistic. That people are going to look at this on the shelf and jump to it because of its cost disadvantage. It will be technically very good but have a cost disadvantage. So we will also offer in California a much more lower cost, reduced wattage product that we think will be competitive with other

product on the shelf. But we have not yet finalized the lamp to light lumen tradeoff. So that's the two-prong approach that we will be taking in California.

PRESIDING MEMBER PFANNENSTIEL: Dale, Philips did announce the phasing out of incandescents in Europe last December or November or so. How were you able to make that decision there and actually not make that same kind of commitment here?

MR. WORK: Actually that wasn't the announcement made last December. The announcement made last December was an intention to work with the lighting industry and with governments to phase out inefficient, incandescent lamps. The announcement was very specific that if there was not a group agreeing to do it we would not do it because we would lose our shirts in the marketplace. That's why we need government assistance on this program. As long as there is a 25 cent alternative on the shelf we think that is a very, very high commercial barrier to overcome.

PRESIDING MEMBER PFANNENSTIEL: So you feel like you're actually making the same commitment here with the proposals that the

industry has brought forward.

MR. WORK: Yes. Yes. And I think Pam had very clear charts, which I appreciate. She also prepared them for another purpose earlier where she did the bulk of the work. So they were very much in line, especially when you consider the volume of lamps and different wattages.

So I think we -- And I think I can speak for all three companies here. What we're talking about here is a global effort. This is not just a California effort or a North American effort or a United States effort. This is a global effort, it has global ramifications.

You mentioned earlier, Commissioner about the sourcing of CFLs, in our case from Eastern Europe and from China, cheaper. Now that is not a trivial problem, okay, and that's not something attacked only by one state or one region or one country. It's a global issue that we face. And to Joe's point, we're faced with the transformation of our industry in the next decade.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MS. HORNER: So if I could complete our last slide I think we're right on time. One of

the most interesting areas, Tim, that you asked us about, and I'm hoping on more dialogue on this later, is the -- we're calling them the consumer education opportunities. So let me briefly summarize.

One of the big issues. If we start to look at what is happening in these very exciting times. We're not just talking about wattages on a chart that I just showed. We're talking about LEDs in the future. And what our -- We have one of our business unit managers who said, when you're talking to California, Pam, can you please ask their help and advice on what to do with the sacred, upper right hand corner of this box. What she meant by that was watts.

This is a major issue. Talk about technology-neutral. The issue of training people to think in light units instead of in watts is not insignificant and we can use all the help we can get. That's what that says. Oh my gosh. You know, if we had the answers we would have done it years ago, I guess.

The second is compact fluorescent-I is sort of the new, a new acronym to go discuss over dinner tonight. This is the newbie, CFLI,

integrated. This is the screw-based type.

That application education, I have -- I won't go over it now but I have quite a bit of information on the dimmable issue. We went -- in fact -- You may not know this but in terms of the dimmable units that are readily available to the market right now they are mostly the reflector types, okay, that would go into a down light. So that the normal bare-bulb types really aren't widely produced in a dimmable version.

So what you end up with is the capacitor blows, basically. So you have a 100 watt, excuse me, a 100 hour life like that. So none of us wants that. We're very -- We want these kinds of products to be successful and we don't want disatisfiers. So I think that's why our intrigue with Michael's suggestion. The temperature effects he mentioned and electronic timers he did not mention but all of those have an effect on this particular thing.

And then we also want to add one bullet that's here and this is the last one and one that is not. The cooperation with Flex Your Power, that's something we'd like to look into. We need all the help we can get in doing these wattage

differences.

But another one is in -- I'm going to just call it enforcement. If we look toward the 2008 standards, we have done tests on this. Customers love, love, love, love this. But if it's sitting next to a 60 watt A lamp that costs 50 cents or 25 cents it's hard to move because these are 75 cents, you know. So the idea of having the 2008 standards is for us a very great first step and we would look toward help in making certain that the surveillance is done that will ensure that enforcement happens. The end.

PRESIDING MEMBER PFANNENSTIEL: Thank you Pam and thank you to the whole panel. Let me just make one observation on your point about cooperation with Flex Your Power. That clearly, Flex Your Power has clearly been an important marketer, if you will, in California to get the message out.

But when you think about it, Flex Your Power is largely funded through utility efficiency programs and it's a ratepayer funded, to some extent, organization. I could see working with Flex Your Power but I think that each of the companies represented here has an advertising

budget that far dwarfs anything that Flex Your Power can put up in terms of being able to fund some of this.

They certainly have the expertise, they worked with California and with helping us get the regulations out. But in terms of the funding sources I would suggest that the manufacturers probably have far greater resources to put to this task.

MS. HORNER: The bullet really did address the idea side, I think.

PRESIDING MEMBER PFANNENSTIEL: Okay, great.

MS. HORNER: Helping, helping us get this complex message out to the public.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MS. HORNER: Thank you very much.

ASSOCIATE MEMBER ROSENFELD: Jackie, I have one question.

PRESIDING MEMBER PFANNENSTIEL: Yes, Commissioner Rosenfeld.

ASSOCIATE MEMBER ROSENFELD: Pam, it looks innocuous but I didn't understand under your CFLI the electronic timer issue. I just didn't

understand what that problem is.

MS. HORNER: If you have an electronic timer, it acts almost like an electronic dimmer does so it's cutting in. It's basically destroying -- the lamp is seeing unwanted voltage in a trickle form so it tends to quickly, quickly accelerate, I should say, the lamp life. Or it can.

ASSOCIATE MEMBER ROSENFELD: So is that something we have to address because we have power over the building standards? I just don't know whose job this is.

MS. HORNER: I think, I know we put it in about two-point type on our package. There has got to be a way to educate -- This is again under education. That one shouldn't use these in combination. Use instead a different type of on-off scenario for automatic timing. A mechanical timer or whatever.

MR. FERNSTROM: So Pam, this is Gary Fernstrom from PG&E. That issue you point out has to do with CFL compatibility with all electronic switch products.

MS. HORNER: Right.

MR. FERNSTROM: So it would be dimmers,

occupancy sensors used in a residential setting, and timers that have electronic switches.

PRESIDING MEMBER PFANNENSTIEL: Gary, did you say there was somebody on the phone who wanted to participate in this panel?

MR. FLAMM: I anticipate that there is somebody, Aaron Feit, F-E-I-T, who was supposed to be online. He's not there? So no, he's not there.

PRESIDING MEMBER PFANNENSTIEL: I know that there are some questions for this panel. Maybe we could take just a couple. We're a bit over schedule so we can get a couple and then we'll get the rest later. Come to the podium if you have a question.

MR. THORMAN: My name is Ethan Thorman. I'm with Super Bulbs. We're the ones who developed that prototype, the LED light bulb. Mine is more of a comment for you.

Having been in Silicon Valley for the last 20 years we created a company that recognized two energy factors, or two factors in this market. One is that market resistance does matter and that toxic waste matters. And so the focus on the product that we're trying to bring to market is to

provide a low energy LED lamp, A lamp, that consumers can readily adopt without education at competitive prices starting next year.

And so the things that we have embedded in there is trying to have long life, cost competitive, the traditional form factor, the A lamp, with a dimmable and on/off capability. A rapid on/off capability. Unbreakable but in the light form so that there is no light difference between what you see from an incandescent bulb and what you get from an LED. And that's the invention that we have.

My comment to you is simply that market resistance does matter. And that education money that we spend might be better spent toward promoting and underwriting the cost of bringing to life technology that consumers will buy without resistance.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Noah, did you have a comment on this?

MR. HOROWITZ: Good morning, my name is Noah Horowitz and I am with the Natural Resources Defense Council, NRDC.

I as a representative of NRDC have been working very closely with the industry

representatives here trying to hammer out a national consensus standard. There is this much that has to get done, we're somewhere around here in terms of remaining issues. But they're big issues so as of now we haven't been able to reach that consensus.

I want to point out a few things that weren't mentioned in the industry proposal that I think are relevant to California as it considers what it should do relative to standards.

First of all, the summary was great in terms of what's happening at the state level. Nationally Representative Harman introduced a bill in the house that's 25 lumens per watt by January 1, 2010 and 60 lumens per watt, roughly CFL performance, by 2015. So these are much more aggressive than the proposals that industry has proposed. In my comments now I'm not saying what's right or wrong, I'm just trying to complete the amount of information that's out there.

In terms of the California target in the Huffman bill of 50 percent savings, we need to be clear. The proposal that industry has put out is roughly bulbs that would be almost 30 percent more, save 30 percent power compared to today's

bulbs and then you have the CFL that's roughly 70 to 75 percent. So it will require some mix. The standard alone doesn't get there but the improved marketplace, hopefully the mix will get to 50 percent. And I think that's what the various scenarios that were being discussed talk about.

I want to point out a couple of quick things relative to the industry proposal. There are many specialty products that the industry would propose not be included in the standard. Things like three-way bulbs, 150 watt bulbs, vibration-resistant bulbs and several others. And while the sales of those are small today, if they are not regulated there is the potential that those sales could grow dramatically and we wouldn't get many of the savings we are anticipating on paper. So we need to be careful to think about how we include those specialty lamps.

The other thing I want to point out is the industry proposal does shoot for that roughly 30 percent power savings but there is no Tier II. So is X years from now the goal to get somewhere near CFL-like performance, 50-plus lumens per watt? That is not there and that is particularly

relevant because the industry is also pushing for very strong preemption language that would cover most states and possibly California.

And definitely in the longer term if California were to settle for something around a 20-ish lumens per watt-type standard they couldn't take the next step unless the federal government did that. So we need to be very careful. Yes, this is a laudatory first step but is that the last step California can do or is this part of a process? The ratcheting that Dr. Siminovitch showed.

Lastly, the 60 watt bin that was shown. Those are pretty wide lumen bins. At the far left hand side the efficacy is down to 16 lumens per watt that could legally be sold according to the standard. And as Pam Horner showed, their Elogic products, all of them came at the far left side of the bins. So yes, they are complying with California standard but I think we need to be careful that there could be a precedent of industry moving to the dimmest side of these bins and consumers might be dissatisfied.

Lastly, the 60 watt bulbs according to the industry proposal. That's almost half of the

market in the United States and I'd assume California as well. And that wouldn't go into effect until seven-and-a-half years from now. And the question is, can California wait that long?

So I just want to point out some of the different things. This is part of a much longer conversation. I'm glad the conversation has started.

PRESIDING MEMBER PFANNENSTIEL: It is a longer conversation, Noah. Thank you very much for your comments.

MR. HOROWITZ: You're welcome.

PRESIDING MEMBER PFANNENSTIEL: Thank you to the panel unless there are other questions or comments here.

MR. FLAMM: May I ask two questions of the panel?

PRESIDING MEMBER PFANNENSTIEL: Yes.

MR. FLAMM: One is, the European standard that you showed, Pam, showed over 100 watt and the industry proposal only goes to 2600 lumens. What will keep the industry from transforming to a 102 watt lamp naturally so that we might be surprised and not get that savings from the 100 watt lamp?

MS. HORNER: Dale gets to answer the questions.

MR. WORK: I believe you will find, Gary, that on the 100 watt lumen bin that the lumens are 25 percent above today's 100 watt lamp. So 102 watts isn't going to cut it, 110 watts isn't going to cut it, 120 watts isn't going to cut it. So you're going to, you're going to have to be far up there. That would be my answer.

MR. FLAMM: Okay, thank you.

MR. WORK: Yeah, we tried to make them as broad as possible. And this was not done only by industry, it was done in discussion with various advocacy groups as well.

MR. FLAMM: Okay. The second question I have, Pam, you talked about what are we going to do about the upper right hand side of the package. And it is my understanding that the FCC (sic) has font ratios. Who has control over changing those FCC rules so that those labeling requirements are shifted to be able to change to a more efficient lamp?

MS. HORNER: Joe.

MR. HOWLEY: Pam would like me to take this one. We have been talking about that

federally as well. The FTC obviously has control over those regulations. There is a proposal -- Some of the discussions at the federal level will be that we reopen that particular discussion to see what kind of labeling might be required or might be more practical or meaningful or necessary if all the wattages dropped to the levels that we're discussing.

Because we believe there might be or probably will be consumer confusion without addressing that in maybe some more attractive way than we're allowed to do today. Because as you mentioned, it is regulated today by the federal government.

MS. HORNER: But we could work with California and then make it a federal effort.

MR. WORK: Gary, I need to go back. On the question that I answered just a moment ago I said we added 25 percent to it. That was done. But in discussions with our advocacy partners we then increased that even further. The 2600 lumen cap on the 100 watt is just below the 150 watt level. And that is a very bright, hot lamp. We tried to anticipate that.

MR. FLAMM: Thank you.

Shall we move to the next panel? What I have asked is that we play musical chairs here and ask for the utility representatives to now take the place where our industry friends are.

MR. FERNSTROM: So Commissioners and staff, I am Gary Fernstrom from the Pacific Gas and Electric Company. I'd like to thank you for holding this workshop. I think it has the potential to offer a very positive contribution to improvement in residential efficiency, given all of the activities that are going on with legislation and regulation and incentive programs at the state and federal level.

Unlike Pam, operating on more than two hours sleep. And having had the opportunity to do some organizing of our panel presentation I tried to set it up so others would do most of the speaking. But I do have a couple of introductory remarks having to do with the utilities' role in all of this as we see it.

So the California Public Utilities Commission a couple of years ago stepped up the emphasis that it is placing on energy efficiency and its expectation for California utilities to contribute energy savings toward that by making

energy efficiency the number one item in the loading order. That means as we look for new generation resources to serve new and existing load we look first toward energy efficiency, demand response and renewables before we look at conventional power production. So that makes energy efficiency an even greater issue of importance to us in our resource planning.

The key word here is efficiency so we look at opportunities to influence our customers to purchase more efficient products, homes and exercise more efficient behavior.

Noah Horowitz just made a comment about the left side of the bin with respect to the new California standards. That's sort of an insider concept but we don't want to be on the left side of the bin. If we are going to bring our resources to support these products we want to see a real improvements in efficiency. And I would like to commend Philips for the dual approach they seem to be taking with incandescent lamps we'll expect to see next year.

So we follow a model in our planning. We look at research and development that is going on. We have emerging technology programs. We

offer information and education to our customers. We can offer incentives and we support codes and standards work. And we collectively like to try and look across the range of those opportunities to provide the most cost-effective influence and to get the most energy savings for the money we spent.

Lighting is the mainstay of our utility energy-saving programs so it is very important to us. The high cost-effectiveness of the savings produced by these programs supports many other programs that we do that are all in the public interest.

In doing this we like to work with other parties. So certainly state and federal regulators of all kinds, the manufacturers, our trade allies in the distribution channel. So I think the big question here though is how far we plan to go in terms of efficiency improvement and how fast we plan to get there. We would advocate for a faster track than maybe some of our friends in industry would recommend.

Another question is how much voluntary support there is for improved lighting. That would be education incentives versus how much

required support there might be by virtue of codes and standards.

So I've brought something of a cheapster. I stopped by Wal-Mart this morning on the way in to this meeting and I bought these five little table lamps, each equipped with a Lutron table lamp dimmer. And I have put in them a combination of different types of incandescent and fluorescent lamps and I'll turn them on when we return from lunch a few minutes before we reconvene.

And I encourage those of you that would like to, to come over and cast a vote for each one of these lamps. There are two categories, incandescent and fluorescent, and I will ask you to guess without looking which is which. And at the end of the day we'll have a look and see how we did in distinguishing the difference. The point that I am presuming we'll be able to make is that it is hard to tell the difference. But we'll have to wait and see how the voting goes.

ASSOCIATE MEMBER ROSENFELD: Gary, are these -- you said some are CFLs.

MR. FERNSTROM: Some of these are CFLs.

ASSOCIATE MEMBER ROSENFELD: But are

marked dimmable or not dimmable? You didn't give me the punchline.

MR. FERNSTROM: Well the CFLs that I put in these lamps are all dimmable versions.

ASSOCIATE MEMBER ROSENFELD: Are dimmable, okay.

MR. FERNSTROM: Yes, they are. So the challenge is to see if you can find the difference. The first test we'll do will be on full brightness. And later during the afternoon I'll dim them down about halfway and you can see if you can distinguish the difference more easily in the dim mode or not.

So that's the challenge and that is the end of my presentation. I've offered a couple of papers that you can read at your leisure this evening if you want something to help you go to sleep.

The other panelists are Richard Greenburg from the Southern California Edison Company, Neil Sybert from San Diego Gas & Electric, Alan --

MR. SULEIMAN: Suleiman.

MR. FERNSTROM: -- from SMUD and Marci Sanders from the Northwest Power Planning Council.

And they are going to all briefly speak about different perspectives on this opportunity from the utility point of view.

MR. GREENBURG: Thanks, Gary. I am going to give a fairly general and quick overview of how our programs operate. And I'm hoping that as I do you will be thinking about ways that our programs can contribute to the transition process that we have been discussing. If you wouldn't mind changing the slide.

Our programs are based on the general concept of energy efficiency that most of you are familiar with. We want to reduce the use of electricity. It saves our customers money, it helps us to save money on generation resources and it helps the environment.

The program has two components. The manufacturer component, which is a situation in which the manufacturer offers a reduced wholesale price to the retailer who passes that price reduction on to the customer. And also the retailer component, in which the retailer buys the product at the normal wholesale price, reduces the price to the customer and then we reimburse the retailer.

The end result is basically the same. Especially from the customer's point of view it's totally invisible. But we have two components to fit the needs of different retailers and make it possible for them to consider the program more palatable for them.

ADVISOR TUTT: Richard, can I break in for a second?

MR. GREENBURG: Sure.

ADVISOR TUTT: Do you also have a program, or a proposed program, to pass out these let's say compact fluorescent bulbs to low-income households or other households in your service territory?

MR. GREENBURG: As a matter of fact we do. I was going to cover that. As a matter of fact right now we are doing a major expansion. We are going to be passing out approximately six million bulbs to one million low-income customers. That is a significant amount because the number in 2006 of CFLs that passed through our residential lighting program at SCE was six million bulbs.

So we're doing what we can to increase the presence of compact fluorescent in our service territory and we intend to expand further as we're

permitted.

The way the program operates is we announce -- after planning the program we announce it to the prospective participants. Those who are interested, whether manufacturers or large statewide retailers, will sign up. They will ask for specific allocations. The manufacturers will partner with specific retailers for specific quantities and months that they would like to sell these products.

We will grant the allocations. Most of the time we have to adjust quantities and things in order to -- for equity reasons and so on and our emphases. Then the participants sell the products and invoice the utilities. The utilities will often inspect the retail establishments. Not as a prerequisite but during the course of the process. We will then pay the reimbursement to the participant. We also do evaluation, measurement and verification studies after the fact as well to show the success and effectiveness of our programs.

Any products that are ENERGY STAR labeled, whether they're screw-in CFL fixtures, plug-in lamps, are eligible for the program. Or

any kind of hardwire fixture.

LED products are welcome in the program at the discretion of the program manager. Usually we look at these products for their ability to save energy as opposed to add load like some display lighting and so on might do.

And we offer incentives that are within our threshold of cost-effectiveness. For that reason sometimes the LED incentives are not quite as appealing to the manufacturers as we would like. We're hoping that as time goes on we might be able to form a better fit with them on the LEDs as products develop and the price comes down.

We offer cold cathode lighting but there's been no takers. It's really more of a nonresidential type of product.

We do offer incentives on one incandescent product, that's exterior motion and photo sensor fixtures, which save roughly the same as a CFL.

We have been operating these programs since 1991 when our first CFL rebate came out. Within just a few years we moved to what I have described already as an approach that we call upstream or midstream. So since 1993 or so we

have been operating the same, basic type of program, expanding it to include different models and different products.

We have helped millions of people to install CFLs and we're going to continue to keep up with program advancements as we have throughout the years. We have tried to make it a very open program to new products and new technologies.

So that's the end of my presentation. If anyone has any questions feel free.

PRESIDING MEMBER PFANNENSTIEL: Richard.

MR. GREENBURG: Yes.

PRESIDING MEMBER PFANNENSTIEL: I know this is going to be a really tough estimate. But will all of the CFLs you have given out do you have any idea of what percent saturation you might have in your service territory?

MR. GREENBURG: The saturation studies we look at are usually at least a year old. Based on those we have a great deal of market potential left. Somewhere in the neighborhood of 85, 90 percent of available sockets have not been filled with CFLs.

PRESIDING MEMBER PFANNENSTIEL: So you might have as much 10 or 15 percent that do have

CFLs in them then.

MR. GREENBURG: Right.

MR. SYBERT: I'm Neil Sybert from San Diego Gas & Electric. I'm just kind of tailing in a little bit on what Richard has already kind of mentioned. We kind of wanted to make sure that there was an understanding that we are trying to look at adapting a program to newer type products.

I am using the term, specialty bulbs, that's kind of loosely. As the presentation says, product development opportunities. I use the word development loosely too. I think it's really more of the opportunities within our programs on a statewide basis to do some different type of lighting than just the typical CFLs that are out there.

Our goal is to kind of emphasize the idea of the whole house approach and the proper use of CFLs. We want to see other types of product.

In order to do that we have actually put a specialty bulb incentive or an additional bonus incentive for those who are willing to put in various types of products that are not the typical CFL such as globes for the vanity lighting in

bathrooms.

The A-line reflectors. Again, these are generally more costly. They weren't necessarily the baseline items that we have done in the past that we put out there.

And then we're looking at the dimmable as well. So as the needs are there for various types of things we want the people or the customers that we have to see the potential to put these in various different places in the home and not just put them in closets.

As the technology comes to fruition and as things progress we want to be able to provide some opportunity for them by increasing the amount of rebate that we provide. So there's some bonuses. As you can see it goes anywhere from 25 cents to $1.50 to encourage manufacturers or retailers to put these into the store and provide opportunity for customers to get it. Because obviously the problem you face with many of the newer products that are out there is they're just not available in the stores.

And I put in there the new technology. And some of these are things that are current. Again we have the standard incentive amounts that

we're offering for dimmable, reflectors, LED night lights that are out there. Cold cathode again, as Richard mentioned. We haven't had a whole lot of takers on that.

And we're open to new incandescent as that comes down the pike. I know there's some mixed signals there but we want to try to be able to provide opportunity there as well.

Now what we do for additional incentives, and we have kind of on a pilot basis with various solid state lighting, LEDs that are out there. Again, these are hard to come by but what we are trying to do is to provide opportunity. In these cases I think all the utilities are doing some, they're a little different than just the standard bonuses. We might provide little higher incentives. We have a certain amount of our budget that we're providing to put into these.

Again, some of the product is tough to come by but we are in San Diego -- And I am kind of using San Diego's. I'm not sure what SCE and PG&E are doing with some of these lights. But some of the things we're doing is the open and closed. This is kind of more the commercial

lighting but open and closed signs. There's LED signs that are out there that are very cost-effective. Holiday lights and task lights. We're trying to look at this fall as students are buying task lights for their desks that they might consider these alternative LED lights out there.

And then the last slide. Again, this is just an example of something we're doing but I'm sure that the other utilities are looking at various things too. We are currently trying to -- and we don't have a date set on this but we're hoping by the fall to actually come out with a small, probably a limited number of LED reflector lights that we're going to try to offer into a few of the retail stores to see what kind of penetration.

We are actually working with UCAN, the Utility Consumers Action Network, and this is kind of a first revealing for us, working together to do something to provide opportunity for the early adopters out there who want to do some things. Obviously these products are fairly expensive at this point so our idea is to try to provide some fairly good rebates to get them out into the store. Again it will be probably limited numbers.

So that's just -- again, I just wanted to make sure you're aware that we are looking at new technology. Specialty types of bulbs and not just the standard CFLs. And that's it for me.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Neil. Do you have a standard, like a lumens per watt standard on what would qualify? How do you decide which one will qualify?

MR. SYBERT: We have -- Most of the lights that are out there, we're looking for at least a 20 lumens output per watt on some of these LEDs that are out there. So yeah, some of them, they're not hitting where we'd like them to be but we know that if we don't get some things out there we may not see them.

PRESIDING MEMBER PFANNENSTIEL: So you're letting some qualify as low as 20?

MR. SYBERT: As low as. We haven't really picked -- The pilot program, we haven't actually picked the manufacturer. We'll be working with them or a couple of manufacturers. So we really haven't seen what we're going to -- That particular product hasn't been determined. So we'll hopefully get a higher lumen per watt output there.

The task lights that we're looking at, I'm not really sure where they're at. I think they're probably -- As I said, I know for sure they're at least at the 20 but they could be higher in the 20 to 40 watt.

PRESIDING MEMBER PFANNENSTIEL: I have a question for all three of the investor-owned utilities. Are you spending your energy-efficiency dollars to promote, meaning some kind of advertising sense. I know that you're spending dollars to actually give rebates to get these bulbs out there. But what kind of advertising budget do you have to -- And I say advertising kind of in the more generic sense of education and working with customers and finding out what their needs are.

MR. GREENBURG: Yes we do. Of course there are lines between what Flex Your Power does and what we do. At the same time we do a lot. The most effective advertising and promotion that we do actually costs us nothing because it is done by the manufacturers voluntarily and by the retailers. Somewhat voluntarily. To some extent we require it in the program that they have eye-catching displays and in-store materials, signs,

stickers on the products and so on. But they also voluntarily do radio advertising, newspaper advertising and some cable TV that we have seen out there.

Also we have, we do have a promotion budget which we usually spend on bill inserts, promotional brochures, multi-program brochures. So that budget is I'd say extensive. It's reasonable. And we try to reach all of our residential accounts once or twice a year with the messages about compact fluorescent.

We also have customer technology application centers, one in Irwindale and one in Tulare, that have lighting labs and lighting training, education for the public. And we also have the speakers task force, we have additional local government partnership programs in which we do a great deal of promotion and education at a local level of these technologies.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. FERNSTROM: So if I could add something, Commissioner. The way PG&E does its accounting, general awareness advertising is an overhead. So while we do a lot of it we're

limited to the extent that it's difficult to claim credit directly associated with that form of education. And I think the massive education that might be desired to help customers get on the CFL and better incandescent bandwagon is probably outside the scope of what we have funding to do really well.

The second point I'd like to make is with respect to LED efficacy. And I think there are three issues with the efficacy of the LED products we look at. One is the efficacy of the LED itself, two is the system efficiency of the LED coupled with whatever power supply it has. So that's the total input watts drawn off the mains relative to the light output you get. And the third is where the switch is. And frequently these devices have the switches in the secondary of the power supply, which causes the power supply to be plugged in and energized. And if it's a velocity power supply it has perhaps a significant standby energy use over the course of the year.

PRESIDING MEMBER PFANNENSTIEL: Thanks. Neil, did you want to add anything?

MR. SYBERT: Outside of what Richard mentioned, we do -- Even currently now we have at

the San Diego County Fair a fairly extensive lighting display there to allow people to see a little bit more of what's available out there as far as lighting is concerned.

Also in our general campaign we also include that. And also websites. We try to make sure that especially with disposal that people know how to properly dispose of the CFLs. So our website is also a means of getting some general information.

MR. GREENBURG: Could I add one thing? I just want to -- So I don't omit this portion. We do have at Edison, and I think they have similar initiatives at the other utilities. We have a program that is built to the public as Operation Light Exchange in which we do extensive outreach to neighborhoods to come bring in their used incandescent, plug-in lamps, table, desk, floor lamps, torchieres and holiday lights and exchange them for either fluorescent products, or in the case of holiday lights, for LED holiday lights. And that has been very successful and is very, has a high PR factor to it. So we're getting out there in the public.

MR. FERNSTROM: Maybe one other, maybe

one other quick thought. I think we all collectively rely pretty heavily on ENERGY STAR with respect to a lot of the work we do so we get a lot of good coverage through that program.

MR. SULEIMAN: Are you guys done?

MR. FERNSTROM: Yes (laughter).

MR. SULEIMAN: I'm Alan Suleiman, I'm with the Sacramento Municipal Utility District, we are not an IOU. Not to repeat the same information but we pretty much do the same approach in residential lighting whether in rebates or community outreach with our customers.

This year we have done about or we're projected to do over one million CFLs in a half-million customer base. So we probably think for every customer we've gotten two CFLs just this year. We're planning to have 1.25 million CFLs next year. We've done the holiday lights, the LED. A lot of audits that we do to customers' homes, our energy specialists actually replace or install the CFLs in their homes at no charge.

But our main challenge has always been, and a lot of focus that we have done is on education. We have provided a lot of venues for education, whether it's from our printed material,

bill insert advertising like every other utility does, but also through an energy center similar to TCAC or BEC where we invite residential customers to have big -- and we get a lot of attendance of our homeowners to learn about efficient lighting technologies and things that they can do in their home to improve lighting energy use.

And it's always been lumens versus -- I mean, it's been mentioned before about the watts on the lamp and trying to educate our public about looking for lumens rather than watts.

We've had also a couple of exchange of torchieres, bring your torchiere. And then we pile them up and drive over them or something like this to get some good PR. Dr. Siminovitch helped us with that too a couple of times since we're neighbors.

So that's basically what we do. We partner with builders also in new construction. Which that's kind of a tough market, in residential new construction to be focusing on lighting, because that's kind of the last thing that builders want to worry about. And on a case by case. The last time I think we're partnering with Lennar Homes to do efficient lighting

offerings within their new homes.

PRESIDING MEMBER PFANNENSTIEL: Thank you.

MR. SULEIMAN: I didn't have a presentation.

MS. SANDERS: Hello, I am Marci Sanders and I am with the Northwest Energy Efficiency Alliance. We are based in Portland, Oregon and we are funded by all the electric utilities in the Pacific Northwest. So that would be Oregon, Washington, Idaho and Montana. And our mission is really to work in the marketplace to advance energy-efficient products.

So market change is really our focus in what we do on a programmatic basis. And while we work to the same ends that everybody around here is talking about in terms of pushing the lighting market we are less about resource acquisition than we are about actually changing the market for lighting products.

I have a little presentation here that is really focused on the work that we have been doing that has been focused on the CFL market over the years. And it has really been about ten years. So I'll talk a little bit about the market

changes in the CFL market as well as the NEEP program approach that we have taken and the measurable impacts that we have made over that time period. And then just a little bit about kind of observations, tipping point observations in terms of the market changes.

We started in this market, like I said, about ten years ago. At that time we estimated that the market share of CFLs was probably close to zero. The market barriers were fairly insurmountable at the time.

Very high priced ranges for these products. They were not a desirable looking product or performing product from a quality standpoint. They were not available widely in stores where people bought lighting. And there was just not a very high awareness. While there was a high awareness of what compact fluorescent or fluorescent lighting was there was a lot of confusion about why you would use it and who should use it. And the purchase rates were relatively low they were less than 15 percent. And so that was a gap between the awareness that consumers had of the products and those who were purchasing.

And I've kind of divided the changes in the market since then based on sort of the pre-2001 time period the post-2001 time period because of the enormous response that, demand response that occurred as a result of the West Coast energy crisis in 2001. We did see CFL sales in the Northwest spike from about 350,000 in sales a year in 2000 to over six million in 2001. After that it dropped back slightly and then has been increasing every since. To the point where last year in 2006 we recorded ten million sales in the region.

We also have seen since the 2001 time frame a lot of new manufacturers entering the market. Most of them, as has been mentioned, producing offshore.

Prices have also dropped significantly. Sort of the economies of scale scenario. With the average price being well below $5 a CFL.

And the products have had more consumer appeal. They have improved in quality and sort of the aesthetic of the product.

The next slide shows the numbers of the bulb sales in the region as well as how that relates to market share. So we've gone from

virtually nothing to about a 16 percent market share today with the ten million sales.

We think that the drivers have changed. The last five years or so have been fairly interesting. As I mentioned before, the 2001 West Coast energy crisis was a major driver of change in that the region responded with its first coupon campaign of any consequence. It was a $6 discount on the purchase of any CFL. And these coupons were spread so widely and made so available it was amazing. People were Xeroxing them and passing them out in Home Depots.

The industry also responded, we think, to some work that Pacific Northwest National Laboratories developed in concert with funding from us to push the smaller size bulb. And we called the sub-CFL procurement. But it really was a critical step in moving towards this twister-style format or form factor for the bulb that brought it to a smaller size.

Another driver in terms of the acceptance of these products, we think, has been the third-party product testing. The national third-party product testing known as PEARL that was instituted in line with ENERGY STAR but not

done by ENERGY STAR.

It was actually funded by a bunch of programs around the country that were concerned about making sure that these products actually met the claims that they, that they were touting as well as the specifications of ENERGY STAR. Because there was no off-the-shelf testing being done, it was testing that was done in a lab that was presented to ENERGY STAR to qualify them.

And as a result of this testing the specifications have indeed become more stringent in ways that have improved the performance over time of these products.

Just quickly about our program approach. We as an organization have not done rebates any time, well with the exception of the very first year. We have moved away from that. We have done some cooperative marketing at retail. Our focus has always been on retail and helping retailers to stock these and merchandise these products. So we have provided them with cooperative marketing funds but not to any extent related to actual rebates.

The utilities themselves do offer rebates and have offered rebates since 2001 to a

fairly, you know, to a fairly high level. But when we look at the impacts it will sort of come out that rebates have not been the single most impactful driver of sales over time.

And like I said, our focus has also been on product quality and specification development for ENERGY STAR.

And as we have progressed in the market with higher volumes of products available we have seen that they have been concentrated in the big box stores and so in the last couple of years we have really focused on trying to get the other channels, retail channels, involved in selling these products. The drug, grocery and small hardware.

Our goals. The regional goals for CFL sales have been focused on kind of an incremental, million sales over a year for the last couple of years. As well as focused on some indicators of consumer satisfaction and persistence. So we really look closely and track CFL removal rate. So purchase intentions to replace CFLs with CFLs. And that kind of gets to the persistence issues.

And the third goal, like I mentioned has been really to expand the retail distribution into

the smaller markets. The status of the twister style CFL is that it is widely available in the big box retail but the prices are still higher in the smaller markets and they are limited in availability. Or were a couple of years ago when we embarked on this.

And this next slide is really just to sort of reiterate all of that with the fact that through our approach we are continuing to focus on to meet the first two CFL goals. And we have actually met both of those prior to the 2009 of this cycle of our program.

But our focus has been on the third goal, which is really to target the distribution in the smaller channels and increase the availability of the products for first time purchasers. And we have done this with a buy-down kind of approach. And it, again, isn't using the funds that we put into the marketplace. Actually that buy-down is using the funds of a collective group of utilities.

I'm going to skip the next slide actually so go to the next one. And this slide shows the per capita bulb sales and estimated bulbs per household over the years as well. So

we're looking at about six to seven bulbs per household now as of 2006 sales. And that actually has increased tremendously in the last two years. And that's the time frame that we have actually been working on, this expanded distribution kind of approach.

Basically the rest of my slides are going to continue to sort of demonstrate the impacts that we have had in the marketplace, the measurable impacts. This slide is a very important slide. It shows how we segmented the market between purchasers, aware non-purchasers and unaware, non-purchasers obviously. It sort of speaks for itself. We're at a stage now where the purchaser rate is, you know, pushing 70 percent. We think that by the end of this year with the sales that we're projecting that that will increase up to 75 percent.

The aware, non-purchasers also has decreased by half since we started tracking this. So 20 percent of people who are aware and that haven't purchased CFLs, you would think actually that would be a great target to go after. That's a very expensive target to go after. They're sort of the laggards. And then even the unawares.

That 14 percent rate is probably not going to change over time. Those are just the holdouts that won't ever move to this technology. Unless they're forced to, of course.

The next slide shows this intention to purchase. And it has stayed the same for the last couple of years at about an 80 percent rate. When we ask people if they intend to purchase CFLs in the next year they have, they have indicated that indeed they do by about 80 percent.

The next slide shows what we have done in the last couple of years with our focus in the smaller markets. It's quite interesting. The market share decrease shows where between 2005 and 2006 in the do-it-yourself channel, which is the first bar, the blue bar, it shows a decrease of almost ten percent, and that same decrease corresponds to an increase in the small hardware from 14 to 23 percent. So we think that the work that we have done has really kind of evened out that market a little bit more.

And finally the observations that we have on the overall CFL market, both nationally and locally indicate some fairly significant factors. Not the least of which is Wal-Mart's

entrance into the market and their focus on pushing CFLs. That has had a considerable impact in the last year on our sales. We went from 6.8 million sales in 2005 to 10.5 million sales in 2006. So we are projecting another bump up to probably 15 million this year.

The 2006 total CFL sales that were reported by ENERGY STAR were 100 million, which was up from 43 million in 2005. And based on manufacturer projections we're looking at another 200 million sales in 2007.

Another indicator is all the media attention that we talked about. You know, publications like Popular Mechanics. I mean, who would guess they would be talking about surveying their own employees about CFLs. Outside magazine, even. And of course the New York Times and Wall Street Journal and many others. And I would contend that in almost every one of these articles that I have read there is always a mention of Wal-Mart's involvement. So that again kind of tracks back to the impact that Wal-Mart has had on this market.

And then of course all this policy attention on incandescent phase out.

In the Northwest market we are seeing, and I mentioned this earlier. Even with the very high number of utility rebates and millions of dollars being spent on utility rebates, on CFLs, three out of every four CFLs sold in the region were purchased without rebates.

As I also mentioned the Northwest is on track this year for 15 million sales. We expect 18.5 million in 2008 and 23 million in 2009 based on the history and where we think the market is going.

And that translation of 23 million just happens to be 50 percent of the sockets. We think right now we're at about 20 percent of the sockets. And I have seen some analysis of that that indicates that 20 percent equates to about 40 percent of the use, lighting use in the home.

So that's my presentation, thank you.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Thank you very much, Marci, for being here and sharing this with us. A couple of quick questions. One is the question that heard us discuss earlier about disposal. What is being done, how are you handling that?

MS. SANDERS: Well, we've done -- We've

looked at that very closely. As a regional organization we put together some really good materials for utilities to use with their customers on proper disposal and some more information about the presence of mercury or lack of presence of mercury in these bulbs and what's happening with the lower mercury levels.

We have also helped facilitate a couple of pilot recycling programs; one in the Lane County area of Eugene and the broader Eugene area. There's kind of a consortium of utilities there that have worked with the Lane County solid waste folks. They have a couple of retailers, local retailers that are accepting bulbs. They did the pilot a couple of years ago, had good success with it and have continued to fund it. So there's an upside there. And the story really is the cooperation with the local solid waste folks to really make that happen.

The Seattle area has also done some demonstrating up there but hasn't had the uptake of the retailers as well as the Lane County folks have. So what we have learned is that this is a very expensive proposition to set up these recycling efforts. The volumes are low of

products that come in so your economies of scale are working against you. And it really has to be more about image and marketing and those benefits that you get out of it than actually, you know, creating a bottom line incentive.

PRESIDING MEMBER PFANNENSTIEL: Has anybody tried recycling, say, at the place of purchase? Putting bins in the Wal-Marts for recycling. Is that the kind of thing that's being done?

MR. SANDERS: Well that's what the retailers in the Lane County area have done. They are independent retailers that are doing it. There's a large, independent retailer called Jerry's Home Improvement that competes amazingly well with Home Depot and their sales of CFLs have been really remarkable over the years. So they are, they are offering that to their customers in the store.

And of course we know IKEA does offer that as well. But none of us are working with IKEA, they don't sell ENERGY STAR qualified bulbs. That's kind of been the basis of our program.

PRESIDING MEMBER PFANNENSTIEL: Well let me ask the California utilities. What are you

doing on helping customers to dispose? Are you doing place of sale kinds of disposal?

MR. SULEIMAN: We're in talks now with a few grocery stores. The logistics are very complicated how this is going to transfer into waste sites. But we found that the customers would like it mostly where they shop all the time rather than home improvement stores. That they're at the grocery store. We're still in the early stages of setting up some kind of cooperative between these grocery stores and waste disposal sites. We think that would be the most successful way of having customers turn in their burned CFLs.

PRESIDING MEMBER PFANNENSTIEL: Gary?

MR. FERNSTROM: We do a lot with refrigerator, second refrigerator pickup and recycling. And the challenge is to figure out how to extend that model in a way that would work with the CFLs as well. I don't mean have trucks come out to pick up the CFLs. I saw that skeptical --

PRESIDING MEMBER PFANNENSTIEL: That's an efficiency improvement in itself.

MR. FERNSTROM: But, you know, the model of doing recycling work within the utility. So we need to figure out how to work with the retailers.

PRESIDING MEMBER PFANNENSTIEL: Nothing else?

MR. SYBERT: Yes. Again though, it's really working. We are talking with retailers. We also, a couple of the cities we're looking at doing some -- just a recycling day type of thing. Right now it is in the early stages for us as well. We're providing information. I'm sure you've heard the story of the HazMat coming out to the lady and $2,000 or something later. So we are trying to provide information that if you break a CFL that it's not the end of the world, you don't have to call HazMat out.

So a lot of it is informational at this point and trying to look -- Because we think the best model at this point outside of having the disposal companies charging in excess, you know, some type of a tax, is probably working with the retailers.

And I know that there has been, we have been discussing, I think all of the utilities nationwide, whoever is involved with CFLs are talking with Wal-Mart. And I think they have an interest in possibly providing collections at their locations.

PRESIDING MEMBER PFANNENSTIEL: It doesn't seem like that should be insurmountable. I mean, it seems like it's a -- I understand that there are issues working with the retailers but it does seem pretty logical.

Marci, one other question. You kind of went through the fact that whatever your number was, three out of four CFLs sold without rebates. And yet you're incredibly effective in promoting the program. So what is it if you don't think rebates do it?

Clearly there's a lot of buzz right now about CFLs and lighting efficiency. But it's actually, it seems to me looking at your numbers, even sort of before this current buzz, you were on to something. And is it some kind of very targeted advertising? Is it working specifically with the retailers? To what do you actually attribute the success?

MS. SANDERS: I think, I think it's the long-term, sustained effort that we have had in building relationships with the retailers in the region. There's just no other way to explain it. And it certainly isn't a big advertising budget. We have done no consumer, mass media advertising.

We've worked strictly right with the retailers hand-in-hand in helping to figure out ways to promote these products. I think at some point, you know, the light bulb goes on for them, it makes sense to them, and they just take it from there.

PRESIDING MEMBER PFANNENSTIEL: So it sounds like the cost per light bulb promoted must be much smaller than say for the California investor-owned utilities who are paying -- or anybody who is doing that promotion with rebates.

MS. SANDERS: I think we have taken the total cost that has been, that we have spent over time on promoting CFLs against the total number of CFLs that have sold and we're at about a penny a kilowatt hour.

PRESIDING MEMBER PFANNENSTIEL: A penny a kilowatt hour? That's pretty impressive, thank you.

MR. FERNSTROM: So if I could add something. I think the California utilities have done a lot to maintain the efficacy of the rebate programs, even though as Marci points out to some extent the market is taking off by itself. For one thing we have moved the programs upstream to

reduce the administrative cost per lamp. And we have tended to focus the programs on a higher quality, specialty lamp. One that fits different sockets in the house that perhaps haven't previously been addressed like the globe-type lamps and things like that.

Southern California folks, do you have something to add to that?

MR. GREENBURG: Yes. We're always looking for new, innovative ways to promote CFLs at lower cost to us. Some of the things we've looked into, and probably the most successful thing we've done, is we've allowed the manufacturers and the retailers to bid lower incentive amounts so that they compete against one another for the dollars. That's only one of the criteria we use when granting allocations but it's enough to help an equilibrium of incentive amounts take place in the marketplace so that we're operating at a more cost-effective way.

(Commissioner Geesman and Advisor Jones stepped out of the meeting room.)

We have also looked into doing some different approaches to claiming energy savings

and influencing energy savings. We have for the most part not been able to overcome the ability to quantify and verify that the energy savings are taking place. Under the current protocols we're bound to we would not be able to claim energy savings in a program like the Northwest's because the protocols do not exist or are not yet developed enough to be credible to our Commission and their staff that we did actually influence those sales through our efforts.

MR. SYBERT: And I think it's good to point out too though that the California market has had some direct influence on the price point of CFLs and I think that's even for the regions.

The number of CFLs, you know, that have been sold in California in the last couple of years are quite significant. And I do believe that the price points are going down. I am not sure what they are in the Northwest, if they are still paying $10, $15 a CFL. But my suspicion is it's down a lot more than that even. But I do believe that your -- You mentioned that the utilities are providing rebates too.

MS. SANDERS: Some of them are.

MR. SYBERT: So it's not like there's no

rebates being offered even in the Northwest. It depends on the area.

PRESIDING MEMBER PFANNENSTIEL: Right. But the study showed three out of four sold without rebate. And that was kind of, that's what I was focusing on.

Other questions for the utility panel? Tim.

ADVISOR TUTT: I have one question of Marci. In your research did you track customer satisfaction with these bulbs and reasons why they may or may not purchase them for both purchasers and the non-purchasers?

MS. SANDERS: Yes, we have done that. The satisfaction levels have continued to increase over the last, three or four years. It's interesting, when we ask folks if they're going to purchase again next year like I said, 80 percent said they would.

And for a portion, the 20 percent that said that they wouldn't, the biggest reason why they are not planning to purchase next year is that they're storing bulbs. Yes, they're waiting for their incandescents to burn out. It used to be the main reason was they didn't like the

quality of the product or they were too dim or whatever. Now it's that they're storing bulbs.

MR. FERNSTROM: If I could add something to that. I noted this in the paper I submitted. I store bulbs. I think our industry friends called it the pantry effect. The reason is that when it burns out I can never find another one to match because, you know, that importer has gone out of business. So, you know, I get a bunch and then when one burns out I've got a direct replacement.

PRESIDING MEMBER PFANNENSTIEL: Other questions, comments to the utility panel?

Anybody on the phone?

I want to thank this panel. This has been really very enlightening in terms of where we are in the state right now. I know Gary is going to run his little experiment over lunchtime.

Speaking of lunchtime. I'd like us to break now. I think we're running a little late so let's come back at 1:45. We'll reconvene at 1:45. Thank you.

(Whereupon, the lunch recess was taken.)

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AFTERNOON SESSION

(Presiding Member Pfannenstiel and Advisor Jones present.)

PRESIDING MEMBER PFANNENSTIEL: People, take your seats. Commissioner Geesman is not able to join us this afternoon. I believe Commissioner Rosenfeld will be back. But I think that out of respect for those who are here and the people on the phone we probably should launch into the afternoon session.

Now my understanding is that we have two different groups on the phone. We have John Cockburn from Canada and Steve Coyne and Shane Holt from Australia. Is that correct, Gary?

MR. FLAMM: That is my understanding, yes.

PRESIDING MEMBER PFANNENSTIEL: Why don't we start with Canada and do the telephone portion at the outset. Can we do that?

MR. COCKBURN: Sure.

MR. FLAMM: Okay. John Cockburn, are you there?

MR. COCKBURN: Yes, hello there. Can you hear me?

PRESIDING MEMBER PFANNENSTIEL: Yes we

can. Thank you very much for participating.

MR. COCKBURN: My pleasure. I really appreciate the invitation from the Commission. Just for the record my name is Cockburn (pronounced Co-burn) as in that famous Canadian singer who I'm sure is worldwide famous, Bruce Cockburn.

PRESIDING MEMBER PFANNENSTIEL: Of course.

MR. COCKBURN: For the family connection there. I am not sure how we're going to fare in coordinating the presentation and the slides. I noticed a bit of delay on the webcast. So if we run into some disjunctures there then we'll just have to deal with them.

PRESIDING MEMBER PFANNENSTIEL: That's the wrong presentation.

MR. FLAMM: Is this the correct presentation?

PRESIDING MEMBER PFANNENSTIEL: No, that's --

MR. COCKBURN: That looks like an Australian type of presentation. I can see a ban the bulbs in there so that's obviously.

MR. FLAMM: So can you do the Australian

presentation (laughter)?

MR. COCKBURN: Probably, but it wouldn't be good politics to do that.

MR. FLAMM: Well that's what comes up when I go North America.

PRESIDING MEMBER PFANNENSTIEL: No, it's the one that says -- it has his name on the front, John Cockburn, Office of Energy Efficiency, Natural Resources Canada.

(Advisor Tutt entered and joined the dais.)

MR. FLAMM: That's not it either.

MR. COCKBURN: Let's see. I can't read the icons off the screen or I could help you.

MR. FLAMM: There it is. I apologize. It's up there now.

MR. COCKBURN: All right. Chris Calwell? No, not Chris either. We should be getting close. Here we go.

PRESIDING MEMBER PFANNENSTIEL: Yes John, you're right, there is a delay so we'll try to --

MR. COCKBURN: All right, I will uncharacteristically speak slowly. So if there's issues just speak up and let me know. As I said,

I'll do my best. Thanks very much. Should I start, Chairman?

PRESIDING MEMBER PFANNENSTIEL: Yes, please.

MR. COCKBURN: Thanks very much for inviting me to address the group. From the perspective of the second, one of the two markets in North America that have 30 million people in it that begin with the letters C-A we really appreciate the opportunity to speak to the group.

Canada, I work for Natural Resources Canada. That is the energy department in Canada, with a lot of other things thrown in. You would think that they should have energy in the name but they don't, but we certainly consider it a lot.

My presentation I think is going to be a little bit different than most of the other ones because I expect to take a short time to talk about things that are not lighting to sort of describe a bit of the common ground that Canada has with California with respect to the use of energy efficiency standards.

The point I would like to make with respect to that description is that we and California, and California have been working very

hard on energy efficiency standards for over a decade now. You folks perhaps a bit longer.

(Commissioner Rosenfeld entered and joined the dais.)

That we regulate a lot of products. We do this a lot. We have minimum performance standards for quite a few products, probably the most of anywhere in the world. And consequently it's somewhat strange to wonder how we missed lamps, general lighting service lamps. So the point that I would like to make is that this is a product that seems to be a good candidate and that Canada and our ministers determined to act on it. So if I could have the next slide, please.

Basically we use all of the elements in Canada with respect to energy efficiency standards and efficiency programs that are used in California and in the United States. We use our standards program to eliminate the worst.

We use a labeling program, our integrated program, to inform choices about what's available out there in the market. And we are very strong components and partners with the ENERGY STAR program to promote the best. And it is our view that these three sort of policy

interventions seem to work.

Hopefully in the next year or so we'll report this slide on impacts of our programs with respect to refrigerator energy use with one that detects the reduction of up to 50 percent perhaps in terms of residential and commercial energy use for lighting purposes.

Our Act, which is the main driver of the program, was introduced in 1992 with the first regulation happening in 1995. And we basically now have minimum energy performance standards for products that cover 80 percent of the energy uses in homes and 50 percent of the energy used in commercial buildings.

And insofar as we regulate electric motors, transformers and a fair degree of lighting products as well in the industrial area, about 50 percent in the industrial sector as well. So as you can see on the right, we have been able to develop quite effective regimes with respect to the number of energy use products with a tremendous reduction as you are all familiar with, with respect to refrigerator energy use.

So in the next slide I basically looked at some of the factors that we feel are important

with respect to keeping that dynamic going. We used Canada's national standards system to attain a standards association to develop consensus test standards on products that you'd adduce the prospect of regulatory action. That's typically one of the first areas where our intentions with respect to regulations occurred.

We used the Energy Efficiency Act and the energy efficiency regulations under that Act to control importation and inter-provincial shipments of products. Our Act is based on the federal domain with respect to controlling international or inter-provincial commerce. It does ont regulate directly marketplaces and that's somewhat different than certainly what happens in California and the authorities that are employed through EPAct.

In Canada we do have a number of provinces. None of our provinces whose markets are regulated by provincial concerns, and we do our best to ensure that the standards in those provincial jurisdictions are complementary to or harmonize with those in the American -- those in the federal.

We use ENERGY STAR and voluntary

programs, other voluntary programs. We have been involved in a number of direct incentive programs from the federal government. But more importantly we have vigorous utilities in many of the provinces and they have deployed a series of incentives, many of them in the lighting area, to promote high efficiency products.

One of the foundations for this effort, this course, none of these programs work without effective compliance and enforcement. And we have what we think is a fairly comprehensive compliance regime that involves reporting of the efficiencies of products that are shipped in Canada. Third-party verifications for most of them. And marketplace monitoring to ensure that the products that are actually offered for sale meet the standard.

So just quickly I'll go to the next slide. You can see the range of products there. I won't dwell on that at all. The typical ones, household appliances, lighting and signage, water heaters, heating and ventilating air conditioning products, and other kinds of products.

On the next slide I try and describe a little bit about some common ground that we have

with California. What I'm describing is what I think is a fairly comprehensive, extensive regime.

I'm going to stick one second here to acknowledge the contributions of California to the development of that regime. And also probably about a third or a quarter of the California Energy Commission appliance standards staff have been involved in developing (indiscernible) whose contributions to the development standards in Canada are greatly appreciated.

So we have some common ground with California with respect to harmonized standards/ levels for commercial refrigeration, vending machines, exit signs and transformers.

We are proposing to have basically equivalent standards on electronics and a number of other products that I've listed there in our next regulatory agenda that I'll speak to in a bit. And there may be some additional opportunities as well for further harmonization are useful of a common standards regime in another significant number of other, other end uses.

I guess we should go to the next slide. The next couple of slides are basically -- for your agenda here with respect to additional

standards.

And I just bring that forward to make a political point in a way because the standards regime in Canada has been widely a bottoms-up kind of thing. Once the Act was implemented and the initial flush of the first regulations subsided basically it has been officials rather than politicians that have been driving this, the standards regime. That certainly has to recognize, of course, regulations are passed by a cabinet in Canada so they're ultimately a strong political statement.

But candidate levels, products for regulation would basically percolate up from the bottom, from my end of the world perhaps, and also from what's happening in other regimes and be suggested and get introduced that way. I bring that point to everyone's attention because on the lighting side of things are, things are changing a bit.

In the next slide subsequently, the next two slides actually, going to slide number eight, specifically with respect to lighting products. I think it is often overlooked in the tremendous excitement about general lighting service

standards that in fact we have been regulating standards for lighting products for quite some time now. Right from the first inception of the regulations. General service incandescent reflector lamps in '96, fluorescent lamp ballasts in '95, general service fluorescent lamps in '96, exit signs in 2005.

We are in our forward agenda talking about in 2007, traffic signals, ceiling fan light kits, torchieres. All these things that I've listed here So in terms of the lighting end use there is a tremendous amount of activity already. So it's somewhat surprising that --

Somebody in a workshop noticed today that there is general public appreciation of what we're proposing to do, general service lighting, because we have been in that field for a long time. So I guess we're basically latching on to a bit of an icon here. And hopefully the same system that we develop for these other products we're going to work equally well.

So now I'm coming to the meat of the thing in the next slide. On April 25, 2007 our Minister, Minister of the Environment got up and made their intentions known with respect to

lighting products. Particularly general area, general service lighting. And made a commitment to phase out inefficient lighting in Canada by 2012. And that means specifically that they would bring in a federal prohibition on the importation or inter-provincial shipments of the lighting they deem to be inefficient subject to the energy efficiency regulations.

They also made a, put our feet to the fire in that regard because they wanted the national standards defined by the end of the calendar year so that the market would have, the market would have -- manufacturers plus suppliers and consumers would have an opportunity to adjust to those requirements.

There are a number of details that we all know that need to be worked out in terms of the scope and structure of the standards, the stringency and dates, effective dates. And we'll be engaged in the next few months in fairly intense discussion with all those involved in the lighting market in Canada with respect to what those are.

The final point of that slide is that clearly although the light -- You're probably

quite familiar with this. The requirements with respect to general lighting standards are quite often by the media interpreted to be performance bans. Certainly our approach is not technology-specific. Fundamental to our approach is that we want to define an energy performance standard.

So let's go to the next slide and just talk a little bit about some of the factors that led to that decision. Clearly as we have all heard from Mike Siminovitch and other people, we are well aware that there is excellent, energy efficiency potential in the light end-use area. Again we can gain two events that will address our efficiency and environmental, our carbon reduction objectives of our respective governments.

The source that I put on this slide with respect to a DSM potential study that the department and Canadian electric utilities have produced. And you can see with those two pie graphs, on the residential side 33 percent of the economic potential, economic DSM potential in the residential area lies on the lighting end-use.

Similarly, an even greater amount, the commercial lighting share of DSM potential for 2025 is about 50 percent of what is available. So

clearly this is a very significant slice of the pie with respect to energy end-use.

I think in Canada we have favorable conditions with respect to trying to achieve some of this potential. We have a long-term commitment by utilities, hundreds of millions of dollars have been spent on DSM programs and a great deal of that has been promoting specifically compact fluorescent but also many other forms of efficient lighting.

Government has stepped up. We have commitments to bring in minimum energy performance standards for general area, general service lighting in Ontario. And I must say the announcement by the Ontario government did have some impact on the federal decision to announce a similar requirement.

Nova Scotia as well indicated that it would be going in that direction. British Columbia as well is actively assessing whether or not they want to bring in a provincial standard for lighting. And Nunavut as well, one of our Northern Territories, which will certainly challenge CFLs with cold weather performance. It indicated that it wants to bring in a minimum

energy performance standard to lighting that will rid itself of incandescent lamp sources.

So basically the federal decision out act is really in everybody's interest, I think, with respect to trying to keep a common market in the northern part of North America.

Also the industry statements to that respect. We were certainly watching the European lighting industry pronouncements led by Philips and others. The recent announcement in April by NEMA in the US. We certainly are regarding that with interest and we're hoping that the Canadian side of the lighting industry comes up with something similar to that.

We have a good standards infrastructure in place. We know it well, we use it well, we support it through CFA. But not only through CFA but through the networks that we have developed and putting in place all our voluntary programs as well.

There is intense political interest in a lighting standard. It's got lots of traction with the general public due to certainly environmental policy challenges. The need for the government to demonstrate environmental (inaudible).

And also the pronouncements of other countries. For instance, the Australian example is very important to Canada making its decision that it needed to do something with respect to a lighting standard as well. So in my view, and I think in the view of the ministers, that these are pretty well ideal conditions for standards to be implemented.

As we have all probably noted, in the next slide, there are some questions to be settled with respect to what that standard is going to entail. Our interpretation from an official side is what we think the minister wants. Is that we think that Canada's -- Gary Lunn, our Minister for Natural Resources and government totally basically expect that in post-2012 there will be no incandescent, medium, screw, A-shaped bulbs shipped or traded inter-provincially in Canada.

I think -- our politicians are not people who think in terms of lumens per watt or watts per lumens or those kinds of metrics. But I think when you ask them what they visualized when they said, we want a lighting standard, they didn't expect to see those lights shipped in Canada after that date.

And I think that they also, their statement also indicated they were very interested to make sure that in order to achieve the gains that they would get from that kind of standard that there would be requirements for replacement bulbs as well, with a timeline to be determined. So that those incandescent bulbs are replaced with efficient substitutes.

Given that, on the efficiency front there is a commitment by the government that they want Canadians to have continued access to high-quality lighting. That they want to achieve these efficiency gains with no deterioration of the life quality that Canadians have come to expect.

And also from a political and international perspective and also from a trade perspective we don't expect Canadian standards -- we expect Canadian standards to be as stringent as those of other major trading partners and aligned with the provincial requirements in the internal Canadian market.

So insofar as this is somewhat of a political statement then, of course, then the fun comes when you see what the reaction is because that generally comes to the officials. So I can

report on some of that reaction that we've had to date with the announcement in April, it is now June. We've been getting a fair bit of mail on the subject.

I should point out that the announcement was supported very, very strongly by a major manufacturer and a retailer on April 27. Those retailers made a commitment to phase out incandescent lights from their product, their offering prior to the standard in 2011. And also we talked about bringing some interesting programs and opportunities to deal with some of the issues with respect to CFL disposition and the blank.

So we had a very strong announcement. It was a good day for media out-takes. The Canadian press picked up on it immediately. As I said, we're dealing with something that's a bit of an icon here. A major national newspaper in Canada publishes a poll on current issues. Their poll on April 26, 87 percent of the respondents said yes, we think the lighting standard is a good thing, 13 percent no. This is a sample. Mind you it's not scientific but it was a sample of some 45,000 respondents to that poll so it's a fairly indicative kind of thing.

Our executive correspondence which comes through our office. Certainly given the nature of the thing, the nature of the political commentary, you would expect people that have a problem with an issue to be more vocal than people that don't so we have been getting some concerns. And a great number of these concerns stem back -- as I mentioned before, it's widely understood to be a prescriptive ban. This is considered to be a CFL requirement and that's obviously not the case with the performance standard and we're trying to correct that impression.

Conversant to follow along with that, there seems to be some public discontent with CFL performance for a whole host of reasons that I'm sure everybody in the room is familiar with and we'll be dealing with them generally.

But the overall political response to the announcement I think is, I think our minister's office is quite satisfied. We think that we have done a good thing there and we'll just have to convert on that.

So I would just like to briefly end with a few next steps with respect to our introduction of an efficiency requirement for general lighting

service. We are hosting a Canadian Lighting Summit on June 27 in Toronto. The invitation is extended to all. Hopefully maybe we can get some California Energy Commission staff up there and they can tell us what's going on or some (inaudible). We'd certainly appreciate that. And we would expect strong manufacturer representatives to be a representation. I know they're interested in a strong Canada and we'd like whomever to show up if you can.

We envisage a highly consultative approach. This is not going to be settled on June 27 in Toronto We expect a number of months of engagement with suppliers, utilities and provincial governments. We're watching the international efforts evolve and we're certainly committed to incorporating them as much as we can.

And of course at that time we'll be trying to refine the scoping for a standard. What lights are covered, establish what those levels should be and set some timelines.

There are some issues as well that we already know that we need to address. We need to define some exemptions. We need to talk about strategies to mitigate collateral issues such as

mercury has been mentioned, lighting quality and performance in some of the cheaper products. Some health issues with respect to reactions to fluorescent lights that we need to deal with.

And also the last slide from the industry slides, consumer outreach on engaging the public with respect to what represents what they're really getting when they buy a light. The lumen versus watt thing is something that I think we'll have to deal with.

So the session in Toronto is planned to be highly interactive with mornings of presentations and then breakout groups in the afternoon in which all of us can chew over those issues. I would like to set forward an invitation to all those participating here to come on up and get in the conversation. Thanks very much.

PRESIDING MEMBER PFANNENSTIEL: Thank you John. Thanks for a lot of good information. Are there questions here? Tim.

ADVISOR TUTT: John, did I hear you say that you hope to finish the equivalent of a rulemaking by the end of this year in Canada?

MR. COCKBURN: That's correct.

ADVISOR TUTT: And are there similar

preemption issues with the provinces as we have here in the United States?

MR. COCKBURN: No, we do not have -- we have actually the reverse. There are no preemptive criteria within the federal government. We are very careful to define our authority under the Energy Efficiency Act within the federal domain under our power to regulate imports and inter-provincial shipments. Whereby provinces regulate markets. So we're very interested and have gotten very good responses from provinces with respect to coordinating our various approaches to this so that hopefully we'll end up with a national standard. But there is no legislative preemptive requirement in Canada whatsoever.

PRESIDING MEMBER PFANNENSTIEL: Thank you Other questions? Okay, thanks John.

Let's go on the phone to Australia.

MR. COYNE: Hello.

PRESIDING MEMBER PFANNENSTIEL: Are you there?

MR. COYNE: Hello, can you hear me? Steve Coyne.

PRESIDING MEMBER PFANNENSTIEL: Yes we

can, Steve, thank you. Thank you for participating. I think we have your slides up on the screen. I don't know whether you're web-exing, whether you can see these slides or if you're kind of going blind on this.

MR. COYNE: Unfortunately I'm going blind on this side.

PRESIDING MEMBER PFANNENSTIEL: Okay.

MR. COYNE: So I'll need to someone to change the slides as I go.

PRESIDING MEMBER PFANNENSTIEL: Okay, we'll try to help you as we can. So we have your title slide on now.

MR. COYNE; Okay, thank you. On behalf of the Australian government, Shane Holt is on the line as well and will participate as required throughout the discussion. If we move to the second slide there.

The work that we're currently doing is in progress and some of the details of this program are subject to change. But currently we have very good industry support for the program and we're looking at final government approval down the track.

Let's move on to the next slide,

International Emissions. You can probably just step through these. I noticed that they're on staggered on their appearance. Just putting a bit of a perspective on. Incandescent lamps are seen as producing around about 560 megatons of greenhouse gas emissions each year based on a report from the International Energy Agency.

If we're able to switch across these incandescent lamps to compact fluorescent or similar performing lamps we should have a greenhouse gas emissions savings of up to 470 megatons per annum. Which equates to around about 38 power stations that might be required, about 190 million cars off the road, and about 470 million trees planted per annum. Next slide.

The Australian situation. We have about 45 megatons of CO2 gas emitted from passenger cars, which is about 11 million in Australia. And we have about megatons of CO2 produced from lighting. You can see from that pie graph there that just under 25 percent of our emissions are from the residential area, which can be safely assumed to be predominately incandescent in Australia. To the next slide.

If we go to the incandescent lamps. In

Australia greenhouse gas emissions are about 6 megatons per annum. We have approximately 80 to 100 million incandescent lamps in Australia.

By switching across to the CFLs or equivalents after full implementation of this initiative, which will be around about 2015 greenhouse gas emission savings will be four megatons per annum. Which again equates to about one million cars off the road and four million trees. Next slide.

The objective of this program is to eliminate the inefficient, incandescent lamps from the Australian marketplace. And again similar to Canada, it is not technology-specific. We're looking at performance-based initiatives.

We must end up with a result that has lower power lamps providing equivalent or appropriate lighting. And that will be the success, the measure of the success of this program.

So the scope at this stage is to start with the incandescents, the halogens and the LEDs then move through to the reflector and non-reflector lamps. And the CFLs at the same time will be subject to a minimum energy performance.

As I think we all realize the earlier generations CFLs and some of the lower end of the market aren't performing at a level that would be expected by the marketplace. Next slide.

The philosophy we have is in February 2007 the Australian government announced the phase-out of inefficient, incandescent lamps. The lamp efficacy targeted is going to be 20 lumens per watt. And this has been agreed with the Australian Lighting Council, which is an association of lighting manufacturers in Australia.

The majority of general purpose lamps will conform to this level by 2014. Next slide.

Phase 1, from 2008 to 2014, will be the 1st of October this year -- 2008, sorry. That will be the date of an importation ban. That will not preclude sale of these items.

But this importation ban will be that lamps must meet a 20 lumens per watt curve, which we'll have a look at shortly, and include the bulb designations of the pear-shaped and the mushroom-shaped. The 240 volt lamps with the caps, end caps of the E26, E27 and B22.

The desired result is that conventional

general service lamps are effectively eliminated from the Australian marketplace.

And at this stage we expect that the CFLs will dominate.

There will be some mains voltage halogen lamps that will remain. The main issue we have there is associated with the current, dimming wiring that's in residential houses. Next slide.

You can see from this chart that's up on the screen that the performance-based, the efficacy that we're working on is a sliding scale technology and the fact that the higher wattage have a higher efficiency or efficacy in producing the light. And the crossover point we're working at the moment is the 20 lumens per watt for 1200 lumens being produced. So currently a 60 watt incandescent lamp. The next slide.

Phase 1, the dimmed circuits is a bit of an issue at the moment. The Australian 2-wire dimmer is not currently compatible with the CFLs that are available.

The first stage of that will probably be to allow the mains voltage halogen lamps to be sold as a dimmable unit. They are approximately 20 percent higher in the efficacy than the

incandescent equivalent or GLS equivalent.

And there are further, current technical issues to be resolved. Next slide.

The next stage will be by 2010. It will be to include the candle-shaped and fancy rounds lamps.

In 2012 to move the mains voltage halogens and incandescent reflector lamps.

And 2014 will then be for the pilot lamps, refrigerator and oven lamps, which we all appreciate have a much more arduous conditions to operate in.

By 2014 then all general purpose incandescent lamps must meet the 20 lumens per watt curve. Next slide.

The scope for the lamps will be reviewed yearly. there will be a committee set up of lighting industry and government representatives. Lamp types only included in the scope where viable, efficient alternatives exist. That is one of the key issues that we're working through at the moment is looking at the viability of these alternatives and their appropriateness.

The conditions will include quality requirements of the replacement lamps such that

there will be an expected rated lamp life that they achieve. And also the lumens depreciation will also be expected to be above a certain performance level.

The government will then monitor the lamp market to ensure unintended or perverse consequences are anticipated and dealt with quickly. So for instance that we don't have a splurge of the mains halogens dominating the compact fluorescent. Next slide.

Phase 2 will be from 2014. It will be the second phase of the incandescent lamp MEPS. So it will be looking at bringing on board or increasing the efficacy requirements for the lamps on the expectation that the lamp technologies will have improved by then. And potentially some of the newer technologies will have the higher performance. Next slide.

This initiative on the incandescent lamps is in conjunction with a number of other strategies by the Australian government called The Greenlight Australia Strategy.

And that will include looking at the performance of the low voltage halogen lamps and their voltage converters.

The compact fluorescent as we currently discussed.

Commercial and industrial luminaires. So looking at the performance of getting the light out of the luminaire from the lamp.

The linear fluorescent lamps. We currently have a mix for those and we're looking at a second round on those.

Road lighting, which is a major issue, particularly in a country as large as ours, which I think is similar to Canada and the US.

And then HID lamps and ballasts. That was the last slide there.

Shane, have you got anything else you want to add at this stage?

MR. HOLT: Some contextual things that I might say. We wanted to focus our presentation today on exactly what technical issues the Australian industry and government are currently discussing. If you find it helpful I could probably recap some of the issues that John Cockburn from NR Canada touched on to compare and contrast the Australian circumstance, if you'd find that helpful.

PRESIDING MEMBER PFANNENSTIEL: Yes, I

think that would be very helpful, thank you.

MR. HOLT: As Steven suggested, Australia is a country as large as the continental US. We have 20 million people, and just like you a relationship with Canada. Much of what we do is with New Zealand so we can talk on behalf of 24 million people.

Anticipating one of the questions about preemption and the relationships between government. With such a small country that we have to organize our political selves through some committee structures. I'm the chair of both the electrical and gas equipment committees. Basically it is the desire of our government to sort out truth, bring in frank discussions, and sometimes quite loudly expressed, to come to an agreement of what all jurisdictions will agree. And then we go to industry.

So we don't have issues of one-state pitching a particular position and other jurisdictions maybe either endorsing or not endorsing or coming in at more stringent or less stringent levels. We try to organize all of that first through processes of government. And having done that we're able to present a common, united

front to industry that hopefully means our process is delivering on the agreed government position reasonably quick.

Just like -- And I am not saying that Australia's program is (inaudible) of the North American position. I have had the opportunity to visit both the US and Canada many times to -- I can't think of the polite word, the impolite word is steal your very good ideas and your very good processes. And we are trying to pick them up here and maybe Australianize them.

What happened here though. Like John was saying, most of the debates are held between technical consultants like Steven Coyne and backed up by government officials (inaudible). And that's a reasonably robust scheme that delivers outcomes that one would normally associate with standards and labeling progress around the world.

This lighting is very different. Just like Canada it has been driven by a ministerial edict. The environment minister for whom I work for, director of end-use energy efficiency, there is an MOU between the environment portfolio and the energy portfolio to ensure, again, that we have commonality of positions when we go to the

marketplace. All of this is driven by the minister's decision that the GLS lamp needs to be phased out as quickly as possible and all incandescents need to follow very quickly.

We have tried to anticipate how long that will be. We have given ourselves a little bit of an opportunity to have a dialogue with industry so that -- We're hopeful that by the beginning of the next decade that the LED technologies will be available in this country so that we can phase out halogen-type lamps. That's more hope than science but we would continue to work with the industry, pushing as much as government can push, so they bring the technologies to come into our marketplace.

We have got about eight million homes and our lighting is a little bit different from North America. We have on average about 12 lights per home across the entire board. Newer homes have tremendously more lights, moving from GLS but only to mainly low-voltage and some mains voltage halogen.

So what the minister is indicating to the industry at large is that he is not satisfied with that normal marketplace improvement and he by

this edict is determining that the market needs to transform within a few years to at least compact fluorescent-type, lumens per watt outcome.

Just to put it in our context, we picked a 20 lumens per watt for GLS, 230 volts. That's about the same level as about a 25 lumens per watt in your 110/115 volts. Roughly equivalent. So it really was a script that's way beyond any existing incandescent light but it stops well short of what Philips and GE and others have spoken about with the super (inaudible) developing with lumens per watt of at least 30, maybe 35.

We were trying to draw a line in the sand but really think the current generation of GLS lamps will be there. Manufacturers shouldn't look at the 20 lumens per watt and think that's anything other than just a line that we have artificially drawn to say that we will get rid of all of the current generation GLS and it impacts on probably at least 50 percent of the halogen products on the market in our country.

So what we will be doing. According to the minister, he was looking at sometime in 2009 and 2010. Most importantly, he and the Lighting Council of Australia, which represents all of the

major lamp manufacturers, control makers and people in the like, have since edged into negotiations with people like me about how they can effect that.

They have (inaudible) it to the department which is putting it together for the position of the minister. They want to accelerate the process in Australia. I believe that rather than dealing with bans and point of sale they would like to move as quickly as possible. Their proposal is for 2008 no GLS products will be imported into Australia from that day.

And we did allow the lamps that are here lawfully to be flushed through our system and wait for normal sale, which falls into that time frame that the minister has already given of sometime in late 2009, maybe 2010 once all of those lamps that lawfully landed in Australia can be sold by retailers and the like. Normally that's just a couple of months but if we allow a year or so there shouldn't be any somewhere in the distribution chain and not had an opportunity to be sold.

So we're quite excited by the fact that one, the minister is driving the process. Two,

the industry is totally supportive of the process and is looking at ways where it can be part of the solution to provide the Australian community with much more efficient lighting for a relatively modest increase in lamp cost, which will be more than offset by the (inaudible) energy bill.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Shane. Actually thank you both. Just let me make sure I understand. You're moving very rapidly with this program and you're doing so hand-in-hand with the industry. There seems to be no push-back in their ability to meet these standards?

MR. HOLT: No, no. We don't have some of the problems that you may have in California. What we call recessed lights, do represent a problem here. Steven was referring to the dimmer circuits. Certainly the lifetime of CFLs placed in areas where they can't vent some of the heat does create a problem.

That's why we're looking at inventions using mains voltage halogens for some of those until such time as the industry can come up with a CFL that's a bit more robust in very hot climate. And in terms of Canada, a little bit more robust

in terms of those arctic temperatures that they have up there for start-up and run time.

There's a range of technical issues that we've got to get through. Certainly mercury is something that we're dealing with here. We found out after the announcement that there had been a flush of very cheap, dimmer control systems here that won't work effectively with CFLs. The actual dimmer circuit will take all the power for themselves so less for the poor little lamp means that it doesn't operate effectively. So we've got to manage some of those issues.

And probably even more so than in Canada our figures on those straw polls were better than 90 percent of people were endorsing and a number of other people were in the I don't know category. We only had handfuls of people who were keeping back.

Obviously like John, now that the announcement has been made by the minister there are a number of special interest groups, people with health issues relating to fluorescent lamps coming forward. That's something that we'll work with them about, providing short-term exemptions and hopefully long-term technical, technology

solutions.

But yes, this is something the Australian public got's right behind. Something that the minister, in the vernacular, keeps patting me on the shoulder and asking, can he have another light bulb decision, please. Very, very popular.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Are there questions? Tim.

ADVISOR TUTT: Hi Shane. I'm trying to understand what's the schedule of the process here for you guys. By the 1st of October there's --

MR. HOLT: What's happened is the industry has put this proposal to accelerate by rather than just having the ban for retail sales sometime in 2009 or 2010. They would like to, in a sense, volunteer regulation upon themselves. And the Lighting Council covers about 90 percent of all suppliers in the marketplace.

They and their competitors should agree to a regulatory imposition that no more import of product will occur from October next year. And they then say that about 12 months after that we could be fairly certain that most of the lamps will have been sold that came into the country

lawfully. So then we could impose our no more sales of GLS lamps at retail stores.

ADVISOR TUTT: Okay. Was there any discussion in the industry or among the regulators about phasing in the standards by wattage categories or is that relevant in Australia? In other words, 60 watts, 100 watts.

MR. HOLT: No. I'm aware of the lumens and wattage debate that you're having but importantly I think the minister on behalf of the community at large, looking at some larger goals in climate change and other things is saying that, that sort of staged approach from 100 watts down to maybe a (inaudible) is not something that we're looking at. CFLs have the capacity to be, to use only 20 percent of all the power that a GLS uses. We're really keen on using it in that market.

If I may, one of the differences within Australia is we don't have a real strong history of the power companies providing money for energy efficiency initiatives. So where they have seen more recently quite successful giveaways by some of the power utilities of CFLs we don't have that sort of tradition and experience.

And trying to learn from some of those

experiences in North America we are also wanting to start out near the performance standard for compact fluorescent lamps at exactly the same time as we'll be doing our incandescent. It was actually my desire to bring the CFL standards in beforehand so that when consumers to get a compact fluorescent they get a good one and they get a good experience.

What we were trying to avoid here in Australia was people being forced to move from their GLS and going to -- shopping and instead of buying a $5 compact fluorescent lamp from a long-life brand that would actually deliver the savings they were buying a $1 compact fluorescent lamp without a brand coming from factories in China and delivering probably no greater lifetime than an incandescent light bulb and not much better lumens per watt outcome.

We have many of those in our marketplace now. We need to shut the gate on those very quickly. Until we have our regulatory standards in place we're exposed because of that negative experience that people may suffer. But we are really trying to bring the two things in together. There can be no regression and no real key factors

if people get a bad taste.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Are there further questions? Let's go first with Chris and then Noah.

MR. CALWELL: Shane, hi, this is Chris Calwell at Ecos Consulting. I just wondered if you could comment. Do you have a date by which you expect to see the first of the improved incandescent products arrive on your shores that would exceed the 20 lumens per watt curve?

MR. HOLT: We have had some representation from companies like GE and Philips, I think they're in your market as well, about really, the products not really being available until about 2010.

Which is why we chose a number like 20 lumens per watt, because we were not wanting to stop them from developing those sorts of levels. And if it comes in at 28 lumens per watt or 31 lumens or whatever it ends up being, that will probably be where we'll draw our line. Both products become the future next to what Steven was referring to post-2016 or something like that.

MR. CALWELL: Thank you.

PRESIDING MEMBER PFANNENSTIEL: Noah.

MR. HOROWITZ: Noah Horowitz with NRDC. This is a follow-up to Commissioner Pfannenstiel's question, I believe. The proposal in Australia, you're about 20 lumens per watt, which is an even larger number in the US. And if I understand things right the Lighting Council of Australia, which most likely includes many of the companies in this room, their Australian counterparts signed off on that. Yet we're hearing in the US we can't do anything before 2012 and we need things staggered to 2018. So I'm wondering how we can better understand that.

I recognize the Australian market is smaller and there is no local production so more time would be needed in the US. There seems to be a wide chasm here. Any further explanation, either today or in the future would be helpful.

MR. HOLT: If I may, the circumstances. Climate change is a very important issue to the Australian public at present. Whether it's fair or not the fact that we have been in drought now for so many years has translated into a much greater public awareness of that climate change than many other countries.

We are to have a federal election

sometime within the next year, it could be within a matter of months. Climate change is always within the top three issues at any particular point in time. So I'm suggesting that there is probably a recognition by the lighting Council of Australia that this very popular decision by a minister needed to be managed by them as much managed by the public servants. So we have a very useful dialogue.

We have been spending a lot of time with the Lighting Council of Australia and usually their Chinese counterparts where almost all appliances coming into Australia are manufactured. So they've got close relationships with the production (inaudible).

I'm feeling that they, to use a phrase in the vernacular, saw the writing on the wall and they decided that the best way to deal with this issue was to manage it in conjunction with government themselves rather than having it hoisted upon them, possibly by policy rather than technical people like Steven. That we can come to some sensible arrangement.

That's why I'll take you right back to the very beginning. The presentation had a

disclaimer on it. The presentation is very much in accordance with what the Lighting Council of Australia proposal, what they want put to the minister. He has yet to sign off on it. We're just taking time to give him proper briefing.

The Australian position, although the numbers are quite different, is not that dissimilar to what the European manufacturers are putting, albeit that we might be a little faster in our implementation. But certainly we're looking at a phasing in over six or seven, maybe eight years of various technologies.

We're making certain that we've covered off on everything in the residential sector. We're looking at CFLs, we're looking at GLS, we're looking at mains voltage halogen, we're looking at low voltage halogen. All of these things will be regulated within a period of time. And once they're regulated once they will be regulated again at a more stringent level.

MR. COYNE: Shane, if I can add to that too. I think what is also helping the market, the community at large and the general public is quite sensitive to energy issues. Currently a lot of the eastern seaboard of Australia is in its worst

drought in 120 years and we've got very heavy water restrictions.

Now that doesn't seem like it relates to our lighting but it's been in the media at the moment that the governments are actually looking at having to cut back on electricity generation due to the amount of water used by some of the generators the coming summer. So that's having an implication on residences with their energy usage. And I think they're quite, quite prepared now for looking at trying to make changes on efficiencies to be able to maintain their quality of living at the moment.

MR. HOLT: Agreed. And hydro, which represents about ten percent of mainland Australia's power, very little of that has been generated in the last year because there's practically no water in the dams to generate the power. So Australia's power mix is reverting more to fossil fuels.

The Prime Minister has announced that we will have emissions trading and that will lead inevitably to higher prices for energy. So the public at large is aware of this problem. And I think they're embracing the idea that before we

get into some high cost solutions the lower costs are indeed things that you can do that might actually be of benefit to you called energy efficiency. They are really quite sensible to do those now and do them as quickly as possible.

PRESIDING MEMBER PFANNENSTIEL: Thank you both very much. We appreciate both of you, Shane and Steven, for participating this way. Your experience is extremely helpful to us in forming our decisions that we need to make. Further questions from the dais?

I think we should move on now to our next speaker.

MR. WAIDE: Good afternoon, everybody. My name is Paul Waide, I am from the International Energy Agency. If you are not familiar with us we are an intergovernmental body, which means that we're representing lots of different governments around the world. We have 26 member economies. We are based in Paris in France but our member economies include the United States and Canada, most of the European economies, Japan, Korea, Australia and New Zealand. And we are in regular discussion with major economies who are also not members of the IEA about related topics.

Now we do a lot of different energy work. For example, one of the conditions to be a member of the IEA is you must keep rather large oil stocks to be a member for energy security reasons and allow our agency to manage it in times of crisis. And after the Katrina disaster in -- in 2005 was it? I'm getting confused now. But we arranged for the shipment of 2 million barrels of oil a day to the United States to meet the shortfall from the Gulf of Mexico during that period.

But we also do a lot of work on energy policy. Technical analysis on different energy issues. And since the Gleneagle Summit of the G8 economies which took place in 2005 in Scotland we have been invited by them to effectively act as their Secretariat on work on climate change and energy-related issues. And that has been carrying on all the way through.

And I mention that because the first product we put out in support of the G8 plan of action from Gleneagle was this book here called Light's Labours Lost, Policies for Energy-Efficient Lighting. I am not going to make any apologies for the bad pun in the title but the

analogy of course is that we are wasting an awful light of energy on inefficient lighting internationally.

And this analysis pulled together all of the available data, modeled where the world was going with lighting energy use, and it concluded that 19 percent of global power demand is currently associated with lighting. A rather similar figure in the United States I understand. and about 38 percent of that could be saved just by using cost-effective, mundane, readily available technologies. And even more could be saved by doing more radical things in the lighting sector.

Now when it came to the actual question of incandescent lamps we looked at this and this is one of the largest ways you can save energy through lighting. Were they to be replaced by CFLs or equivalent performing technologies on a global level it would avoid around about --

I've got the wrong presentation here, I'm going to switch. I think you've got an out-of-date one here. There's a mistake in that. Yes, this is it, this is it.

It would avoid around about five percent

of world electricity demand or the equivalent of taking 16 percent of the world's cars off the roads in terms of avoiding CO2 emissions. So this is not a trivial contribution to the global warming or climate change issue.

But of course it is not a trivial task and it requires comprehensive, carefully developed and soundly implemented policy portfolios, plus there are some issues of international coordination, which I will mention in a minute.

Now I have been asked to talk about the situation in Europe. After we released this publication -- Before coming on to that I'll give you these, some figures from the publication showing the share of lights by lamp technology in the European Union estimated for 2005. We have similar figures for the other economies.

And you can see that actually in the residential sector, which uses about 33 percent of the energy for lighting, it is actually producing a much smaller proportion of the total amount of light. And of course the reason for this is the low efficacy of the light source that is used in the residential sector, which is predominately incandescent.

But you will see some important differences by comparison with North America. Firstly that although the share of lighting from linear fluorescents is actually not too different between the two economies the amount from CFLs was a bit higher in Europe than it was in North America. But the key issue here is that there is a significant amount from halogens too. And these are halogen spotlights. The Australian presentation was alluding to these.

And in terms of interpreting the regulations which are being put forward in Australia and the proposals which have been coming forward in Europe it is important to understand the terms of reference of these. Because the Australian market is 240 volt so it is using the same technology as you have and the European market is running on 230 volts. The same companies are supplying the markets.

And they have a lot of halogen spotlights, which are used particularly in kitchens and bathrooms providing concentrated, focused light, which is less common in the North American market for various reasons. There's also a lot of halogen capsule lights as well, which

have become increasingly common in residential lighting. The other thing is that there's less used elsewhere. There's less incandescents being used in non-residential sectors in those markets than is true I believe in North America.

So to give you some context anyway. A part of the work we were doing for the G8, we have been making -- we had a mandate to make concrete policy recommendations on energy efficiency. Now we first started doing this for the St. Petersburg Summit in 2006 and we put forward four concrete recommendations. One was a rather general one on lighting encouraging the G8 economies to explore policies to realize this large 38 percent savings potential that had been identified.

These recommendations were endorsed by the G8 at that summit and they requested that we develop them in more detail, which is something we have gone on to do since.

Now since that time Philips at the end of the year in 2006 launched a major, had a large press conference in Brussels where they proposed that a global phase-out of inefficient incandescent lamps in favor of energy-efficient alternatives over a ten year period would be a

desirable outcome.

And this was mentioned this morning, Dale alluded to it. And quite rightly mentioned that they said in the communiqu,, in their press release, that they would like to see regulatory action to set a level playing field for all actors. Otherwise it would be impossible for them to deliver on this.

Now following off from this and from our mandate from the St. Petersburg summit we organized a workshop in the end of February 2007. And this was jointly organized with the European Union. It was looking at the issue of CFL quality and strategies to phase out incandescent lighting. In the week preceding that Australia announced their policy of phasing out incandescent lighting by 2011.

Now at the workshop we had all the world's major lighting companies present. We had the big three or four, depending on exactly where you're split. Osram Sylvania are one company in North America, they're two in Europe. But we also had the Chinese industry person as well, the Chinese Lamp Manufacturers Association.

It's important to understand the

connection here because 80 percent of the world's CFLs are manufactured in China and they also have a very large domestic market as well. When you're looking at where are the international markets where incandescent lamps are currently consumed, it's in North America, Europe and China. They account for over half of the global market for incandescent lamps. So whatever happens in those markets has ramifications for the markets elsewhere.

At this meeting the major OECD producers agreed a common position, announced a common position supporting the objective of phasing out inefficient incandescent lighting in a reasonable time frame.

And there were a lot of discussions about the quality and the availability of high efficiency alternatives, about the need for quality control, which is something which really hasn't been mentioned too much here yet but is certainly a big issue in many markets and when looking at the alternatives.

And also the question of production capacity and whether or not, you know, if this was to be managed in some sort of sense

internationally that there would be some sort of phase-out. How would the availability of supply of higher efficiency, high quality alternatives be managed in a way that you don't go from boom to bust.

And I want to mention this issue because you have a totally different cycle production life span between CFLs and incandescent lamps. An average incandescent will last for 1,000 hours, an average CFL anything from 5,000 up to at the highest end 20,000, to more typically 6,000 to 8,000 for the residential market.

And that means that if you're going from having four billion incandescents that are being replaced perhaps once per year you might be then dividing that by six were they to be substituted by CFLs over a long time frame. And in terms of production capacity, there will clearly need to be a peak if that is all suddenly done on one deadline and then a fading away of that. So there are some issues about how that process might be managed.

It was also mentioned that a mixture of regulatory and market-building measures are needed and there's a lot of discussion about

international experience on that. That has been quite productive in some economies.

So what happened since in the European Union. Well on March 9 the European Council of Ministers, which is a meeting of the heads of state of the European Union called on the European Commission to establish a regulation addressing incandescent lighting by 2009 under the provisions of the already existing framework directive for setting energy efficiency standards which are called the Eco-design Directive.

Now this also, as has been mentioned elsewhere, is quite unprecedented. They had never previously given any kind of attention to these sorts of issues. Energy efficiency issues in fact in general, in policy pronouncements. So this is the first time this has ever happened.

Although there was a study programmed under the Eco-design Directive on residential lighting it was made quite clear from this that the heads of state want to see action addressing a serious move away from incandescent, inefficient incandescent lighting.

On March the 12th the UK, which has over 60 million people in it, announced a plan to

complete the phase-out of inefficient GLS incandescent lamps by 2011. And this is independently of eventual EU Directive provisions.

And the situation in the European Union is rather similar to what you have in North America in some regards and different in others. When it comes to traded goods the authority to set regulations for traded products resides under the terms of the single market of the European Union with the European Commission and the regulatory bodies which meet to decide on standards levels.

However, member states -- So the member states cannot set in place a minimum efficiency standard per se. But what they can do is control duties on imported products into their countries and set building code requirements which effectively could prevent you from installing that technology into buildings. So you have multiple layers of jurisdiction as is the case here and sometimes it gets rather messy.

On March the 28th a cross-party group of Members of the European Parliament urged governments and the European Commission to quickly introduce new efficiency standards for lighting and to introduce market surveillance measures to

prevent such standards from being flouted by importers. But also to address the quality issue of the substitutes.

From April through May some other European Union states, Ireland, Flanders in Belgium and Portugal, announce that they are going to introduce measures rather like the UK to effectively phase-out incandescent lighting, independently of whatever may happen to the Eco-design Directive.

And this is presumably via a mix of financial and fiscal incentives and disinentives. In the case of the UK they have a carrot and a stick. The carrot is that the utility program has to deliver so much energy savings and that funds subsidies of CFLs. So now you can buy the standard, most basic kind of CFL, a stick CFL, for almost the same price as an incandescent lamp in the UK. And there has been quite a rapid transformation of the market. I don't have the latest figures to give you because the subsidy has been going up and the penetration rate has been rising quite rapidly.

But at the same time they also control the quality of any product which is subsidized.

So in order to get the subsidy you have to be in a quality surveillance program. And this is how they have been managing the quality issue effectively. And they are also working with the retail chains as well to make sure that all of the major retailers are on board on this process.

I just heard last week that Switzerland is also preparing regulations. And these things are moving so rapidly I wouldn't be surprised if there are some other countries that also have got measures underway which I don't yet know about. But it's quite clear that there was major activity taking place here.

Now from the lamp producers side. It's already been mentioned, the association of lamp producers, we have the same companies that you have here as the European Lamp Companies Federation. On the 1st of March they announced the first ever joint industry commitment to support a government shift to more efficient lighting products for the home.

On the 20th of April they delivered a question and answers document commenting on this issue and supporting government's shift to more efficient lighting products for the home.

And in May they commenced a study on implementation measures for domestic lighting. It's an internal study.

And has since committed itself to work with European Union institutions to develop ambitious minimum energy performance requirements for lighting in the home over the coming months.

Now on the 5th of June they put out their proposal. That's already been mentioned in the first session what was in this but I'll go over it briefly again. They've proposed requirements for household lamps.

Now I'll come onto how this is possible in the European Union to have distinctions for household lamps, even if you have the same kind of lamps used elsewhere. But the important thing when you're comparing this to other proposals, most notably the Australian one, is to understand the terms of reference. Because these actually apply, their provisions apply to all types of household lamps, including halogens, including fluorescent lamps sold into the household sector.

And they divided this up into lamps. Sorry. They have this --

The proposal is that these provisions

would come in over a period of up to ten years.

It would be a phased approach starting in mid-2009. And the criteria for this, of course Europe is a major lamp-producing economy as well as is North America. So there are issues about the production side within Europe and the sourcing side if products are being brought from outside of Europe into the European Union about managing this process.

For each lamp category and for each phase they propose minimum efficiency specifications and have proposed these on the basis of energy efficiency classification used in the European Union household lamps energy label.

The specifications become more stringent over two times periods.

They apply to, the first focus is on lamps with Edison or bayonet cap screw bases or screw or bayonet bases as defined under the labeling directive, which came into effect in 1998.

And these lamps cover approximately 85 percent of the EU27 incandescent lamp market. So they do exclude the incandescent reflector lamps and certain types of other specialties.

When you look at it in terms of the share of the lamp market coming up to 1.8 billion lamps in total then this is how these phases break down in terms of shares.

And as was mentioned this morning, the relative distribution by classes is not exactly the same between Europe and North America. There is more mood lighting and task lighting in general in European houses I would say on average.

The actual electricity consumption for households for lighting is between a third and a quarter of what it is in North America on average.

When you look at these in terms of the proposal it is actually really based around the energy labeling directive. And here you can see an example of the label. I will show it to you again in a minute. And this label applies, it is equivalent to the energy guide label in North America.

It applies to many different types of products, refrigerators, air conditioners, all sorts of other products as well as household lamps. And it is now being applied to cars, to buildings and to many other types of end uses as well in many of the economies. And it basically

ranks performance from A, the best, the most efficient, to G, the least efficient. And is very much a logo which is understood in Europe as a means of rating the relative performance of comparable products.

This works, this label, because it only applies to products, lamps which are distributed through a household retail chain. So if you're buying it for commercial purposes then you wouldn't buy through this retail chain and you wouldn't see this lamp, this label rather. And similarly this is what is being proposed by the industry in terms of their, their classes.

So what they are saying is that for the first phase they would only permit A to D products to be sold so E, F, Gs would be phased out. There is a phasing of these. The rationale behind the phasing is in order to allow the avoidance of this peak of capacity problem which was mentioned and to prime the market and get used to it.

Beginning with the products where there are the largest savings per product terms but there's also most confidence in the quality of the substitutes. There are more problems with the quality of the substitute CFLs down at these low

wattage levels than there are for the higher wattage levels. And industry seems to be fairly confident about things in the 60 to 100-plus watt range in that regard.

And then the second phase would be to make these just the ABCs. Now to you understand what this means, this is roughly As and Bs of CFLs today. You get some which are Bs, some which are As. The halogens can exist between C and E. You get very few Cs in the moment, it's mostly D and E. And the incandescents are mostly F and G. So this is not a linear scale in this case but it is a way of differentiating products in the market.

It is a common lamp label and it is applied in a way that is independent of where the lamp is going to be sold. So you have energy written in all of the languages of the European Union apart from Greek, where it is written across the top here with its own alphabet.

It does rely on understanding from other energy labels which are much better well known and they actually have separate backgrounds and foregrounds for the bigger products with a higher value. And that way they have more language-specific information on them.

But you will notice down here, and this is why I am really mentioning this, is because they actually have on the label, lumens, watts and life span. The life span is rated on this label. This has been in place since 1998 and is on every single lamp you'll buy for the household sector. Now thanks to this I don't think the process is in any way complete but there is more understanding of what lumens are.

From what I understand from discussions I have with people who know the North American market and the European market well, now in the European market you will see you won't go around buying lamps for the domestic sector you will see totally different wattage ranges. They have lots of different types of products. Because people are less just buying that standard 60 watt lamp that they used to. There is a lot of work still be done on communication but there has been some progress anyway on that issue.

When you translate them to the efficacy levels this is what they are. it has already been mentioned in terms of converting these to North American comparable you have to do some, you basically have to raise these figures. Exactly

how much it is depends on where you are on the light output or the wattage curve. It's much less at the low end than it is at the high end.

And an important provision in this as well to understand is that the requirement is that the lamps must also have a minimum life span of 1,000 hours. Because it is possible to drive up the performance of incandescents by reducing the life span. And that could have been one way of actually meeting this.

Now the industry believes that this will actually remove existing GLS lamps from the market. The levels have been set, as I mentioned, to allow halogens, spot lamps, to be included. The halogens are included in this rating scheme. So that is a distinction within the Australian approach where the halogens have been put aside. Because halogens have an important share of both the Australian and the European markets this is an important issue in terms of understanding what these mean, these proposals.

The industry have done their own estimates of savings for this and they are claiming that this will save almost 60 percent of domestic power consumption for lighting around

about 63 terrawatt hours they're saying by 2015. These haven't been independently verified and they are all, of course, based on assumptions on what will be the switch to different technologies.

It has been mentioned that there are new products coming on to the market. At the same time Philips made their announcement they also presented their Edore infrared halogen products, which should be coming into the European market later this year, I understand. The initial price range I am told will be comparable to expensive CFLs, not the cheaper ones, and therefore there is an issue of will people go for a low cost of will they go for instant light quality or energy savings? How is the market going to differentiate?

But at the moment with this proposal it leaves it open to have that differentiation between CFLs and some other times of technologies. Of course it means that there's less certainty about where the market would go to and what the energy savings would be dependant on that.

This is the estimated CO2 savings they are projecting coming from this. What about the next steps? Well the important thing to

understand, this is the industry proposal that has been put forward. The Eco-design Study has just started. Normally they would be taking two years on this but I understand the Commission is trying to fast-track the part concerning incandescent lighting in order to try and agree on a regulation as rapidly as possible.

They will be trying to consider all of the issues which you have been discussing here about performance requirements by lamp wattage approach, for example, the stringency of efficacy thresholds, the mix of probable replacement technologies, potential exceptions and treatment of halogen lamps, industrial policy and also international lamp capacity issues.

And of course there are some open issues which have not yet really been looked at properly in the European Union but I think people are starting to appreciate that they need to, which is quality. They have to manage, police the quality.

How to better communicate color temperature issues. Because of course CFLs can produce color temperatures very similar to if not the same as incandescent lamps but they can also produce many others and communicating that is

still not being done adequately.

Warmup times is an issue. And one of the questions which has been raised is there was an international dynamic going on on addressing, trying to agree on performance specifications for higher quality CFLs. And the IEC has a, which is the international -- it's a technical commission that publishes standards on this is developing a standard right now which as I understand is considering having three different thresholds, performance thresholds.

But this was all based in -- This dialogue was all began when it didn't appear to be probable that there was going to be any major move to phase out incandescent lighting. And it is raising the issue of whether those tiers are sufficiently robust to cover the needs of all different types of consumers and whether there should be some sort of reach tier put out there. There are issues of this kind to consider.

Because clearly within the time frames we have been talking about here there will be a need to have good quality products if you're going to as much as possible meet the needs of consumers but save significant amounts of energy. And that

is the tradeoff, of course, which is being looked at.

Obviously there's issues of testing, supervision and monitoring, which certainly needs some time, some attention.

Now at the last G8 summit we actually made 12 concrete recommendations on energy efficiency. And because it just happened a couple of weeks ago I am now able to actually tell you what they were, they are no longer subdued. These recommendations were endorsed at the summit by all the heads of state.

As regarding incandescent lighting, we recommended that governments phase out inefficient incandescent bulbs as soon as commercially and economically viable. That gives some flexibility, of course, about how this process is managed but it sets a pretty clear goal. And the objective has been bought into by the heads of state at the G8.

It was also endorsed just preceding that at our biennial ministerial meeting where we have all of the energy ministers of the IEA come together. That happened in May this year. And they also saw these recommendations and endorsed

them there. So it actually has broader coverage than the G8.

And at this summit the so-called Plus-Five countries were present too. That's China, India, Brazil, South Africa and Mexico. And my understanding is that they had a lot of discussion about these recommendations and I believe those economies are beginning to look at this issue themselves.

I just want to mention that there were some other movements happening elsewhere outside of the ones we've mentioned. Thailand is preparing measures I understand.

China I know is currently considering them.

India, Indonesia, Vietnam, Ghana, Egypt, South Africa and others have got very major CFL programs which have really been transforming their markets.

Some Caribbean nations have already begun phasing-out programs.

And then lastly I just want to mention that the UNDP/UNEP/GEF, the Global Environmental Facility, is launching a major global effort to support the phase-out of inefficient incandescent

lighting in non-OECD economies.

So thanks for your attention.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Paul, and thank you for joining us. We have been reading a lot about what is going on in Europe so it has been just great having you here to help us understand this. Are there questions on the dais? Questions in the room?

MS. LENK: Hi, Carol Lenk from Super Bulbs. We're developing a LED light bulb that is a truly viable alternative to incandescent.

And first of all I just wanted to comment that this has been really eye-opening with all the representatives from all the around the world to see what other countries are doing because it is not the same in the US.

Well my question to you is, can you address how the European Union is looking at the mercury content inside the CFLs.

MR. WAIDE: That's a great question, I should have mentioned this. There is actually a directive Which was passed I think in 2004 called the Waste and Electronic Equipment Directive and it is now a requirement. And I forget exactly when the provisions come into effect. I should

have ginned up on this before coming here.

But basically there is a requirement that is either in place or coming into place for fluorescent lamps to be recycled, including CFLs. And this is added -- The responsibility for how this is implemented is at the member state level so it's actually happening in slightly different ways in each of the 27 European member states. And depending on who you speak to some of these approaches are better than others. You know, more comprehensive or they're lower cost and better managed.

I've heard figures that this is adding about 25 Euro cents per lamp to the cost of a CFL. Now when you consider that the CFL, even under quite pessimistic cost assumptions has an internal rate of return of over 180 percent, so this is really not a question of economics. It is a question about understanding of economics, perhaps. But even if you double the price -- no, not doubling the price. But if you significantly add to the cost of a CFL it is still going to be very much in the consumer's end-use economics favorable terms for them to purchase one.

Nonetheless it does raise a price

pressure when people are doing peer-to-peer price comparisons at the point of sale. So this is one of the reasons why some of the economies have been looking to rectify this.

And another thing I didn't mention, which is also quite important. there is now a discussion at the EU level about modifying value added taxation provisions at the EU level. They are actually set at the national level but there have been very strong efforts to coordinate VAT levels on goods and service charges, as you would say over here, taxes, at the EU level as much as possible. And there is now a major discussion about --

ASSOCIATE MEMBER ROSENFELD: Paul, can you just say again. You said something about 25 Euro cents extra costs for handling the mercury.

MR. WAIDE: Right.

ASSOCIATE MEMBER ROSENFELD: Does that mean that the vendor has to take back the used bulbs? Where does the 25 cents come from? I just didn't quite understand you.

MR. WAIDE: I wouldn't want this figure to become the reference because I think, you know, there are a lot of figures that you refer -- I've

heard it mentioned that 25 cents is the typical increase in cost to the supplier. And it is the supplier who is responsible for recycling, having the lamps recycled. So they have to make the arrangements with the waste disposal authorities to have that product recycled.

ASSOCIATE MEMBER ROSENFELD: Which is not something we have even discussed in detail here. Thank you.

MR. WAIDE: The VAT issue, I just wanted to conclude on that, was that there is now a serious discussion about lowering VAT on energy efficient products across the European Union. Now typically VAT is 17.5 percent and there is a discussion about lowering that down to five percent for energy efficient products compared to less-efficient. So obviously in the case of CFLs they would qualify for that. And in fact it was lighting that was the first stimulus, if you like, to this proposal. But we wait to see what is going to happen there.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Gary, you had a question?

MR. FERNSTROM: So I had two quick questions. You mentioned that in Europe there's a

strong distinction between the commercial and consumer market. In this country a lot of commercial products for small commercial establishments are purchased through big box retailers and hardware stores. Could you elaborate on how that mix doesn't happen in Europe.

The second question has to do with your quality surveillance plans. You mentioned that an issue with these products was production quality control. So with those surveillance plans do you plan to go purchase products at retail and in effect have a production quality control evaluation mechanism?

MR. WAIDE: On the first question, if a small commercial end-user is buying lamps through the big box retail market then they would have an energy label on in the European Union. So as far as the market is concerned it's residential, it's the household lamp market, even though in reality it isn't. So the distribution process is exactly the same.

For the second, this is a discussion which is just starting in most European economies. When people have been looking at this -- The UK is

the most advanced on this because they have had a national-wide program promoting compact fluorescent lamps through their utility efficiency programs effectively.

And other economies have had similar programs but not on a national-wide scale, generally, with the exception of Denmark as well. Denmark has done a lot too I should mention. But the way it works has been quite different in each economy so where a utility is promoting CFLs then they have actually looked into the issue of quality control themselves. And they have hired labs and whatever has been necessary and made their own sampling arrangements.

There was a European quality chart for compact fluorescent lamps which is entirely voluntary and is being proposed through the European Commission. But the way people use it is entirely up to them, how they use it. So there is mechanism as such to make that in any sense a mandatory provision.

And the industry has been asking very much for better support from the regulators on this topic because they have been concerned about low quality products and the poisoning of the

market effectively for better quality CFLs. So it is an ongoing issue. We could probably have an entire workshop talking about ways that you would do this. But, you know, perhaps we could have a discussion in the margins if you want to talk about some of the specifics.

PRESIDING MEMBER PFANNENSTIEL: I think we probably should thank Paul and move on to our others speakers on this panel. Paul, thank you very much, we appreciate your sharing with us.

Chris, you're up next.

MR. CALWELL: Thank you, Commissioners. This is Chris Calwell from Ecos Consulting and I am here on behalf of Pacific Gas & Electric. This is a forum that is familiar to many of us. We embarked on two previous rounds of standards in this room in the period between 2003 and 2006. Now we have come back to talk about the topic again.

So when I use the terms Tier 3 and Tier 4 it's -- just for familiarity for those in the room, Tier 1, the standard that the Commission adopted in '04, which took effect in January of 2006. Tier 2 was the standard this body adopted in 2006 that takes effect in January of 2008. And

now the question comes up, what might be done from here.

Recognizing that I was near the end of the day I made the one minute of the talk on this slide. If you retain nothing else these are the key themes. What has changed since California last regulated general service incandescent lamps? Well, primarily we have a new imperative to address climate change.

The technology has made some further improvements.

And I think most startlingly is how much international will there is by policy makers to act in concert. When California gathered to talk about this topic in '03, '04 this was not being discussed elsewhere with the exception, as my colleague Paul reminded me of, South Korea, I believe. So California was the second.

We will talk a little bit about some perceived downsides and pitfalls of the Tier 2 standards approach that's already been adopted.

We'll look at a conceptual basis for Tiers 3 and 4 and then talk a little bit about labeling approaches and incentive approaches that might follow it.

I am always conscious as I do these things that California for a long time has treated energy efficiency as a functional equivalent to building new power plants. But it never ceases to amaze me when I see maps like this just how many power plants keep getting built in the United States.

This is a map generated by a consulting firm in my home state of Colorado. These are new power plants or repowering of existing plants that came online in the US between 2001 and 2005. The squares on the map are coal. And the size of the individual dots correspond to the size of the power plant. So as we look at opportunities to improve efficiency I want to always remind people we are nowhere near parity in terms of the investments we make in energy efficiency compared to the investments we make in new power plants.

How much energy are general service incandescent lamps consuming? When we looked at this topic before we mostly thought about it on a California basis. There is now and has been for a couple of years now a DOE study that looks at it federally. So I just went back to see the numbers to remind myself where we're at.

As of 2001 DOE estimated there were 3.9 billion general service incandescent lamps in use nationwide. If you average it out between residential, commercial and industrial applications you get about 65 watts for the average bulb and on average they operate about 2.4 hours per day. Very wide variations as you might imagine in application and residential versus commercial and so forth.

ASSOCIATE MEMBER ROSENFELD: The 2.4 includes commercial use?

MR. CALWELL: That's right, it includes commercial and industrial use. So you could also question whether the assumptions behind the study are 100 percent accurate. We don't have a lot of meters on light bulbs around the country. But this is a reasonable place to start. And they get a number of 57 kilowatt hours per year.

Did you have a quick question, Gary?

MR. FERNSTROM: That's a low number of hours per day but this includes all lamps, many of which don't get used very much.

MR. CALWELL: Yes, we're talking about including closets and very rarely used bulbs as well as -- This is all applications for all

purposes.

So what I had said before in a previous meeting was, in general if you save a watt in a light bulb you're saving about a kilowatt hour a year. And so you see here a very similar agreement because the 65 watts and the 57 kilowatt hours per year, roughly the same number.

So total energy use of general service incandescent lamps is about 222 billion kilowatt hours per year. It's a remarkable number. If you were to serve that load from scratch today you would be building 67 new, baseload coal plants in the US. And since one of them is proposed to be built right near where I live I'm acutely interested in this subject and want to see what we might do instead.

So if you assume since 2001 that CFL sales have been rising rapidly across the country, which I think has been well-established today, we might imagine that that 222 is down to perhaps 200 billion kilowatt hours per year and therefore we'd need 60 coal plants.

So how much energy could new standards save? The new technologies that we have heard some about today, and I'll show you a little more

of them shortly, they're making it possible to cut the power use of current incandescents by about 25 to 50 percent. And interestingly enough, also extend their lamp life to 2,000 to 3,000 hours.

So if you do the math on that it's about 16 to 32 average watts of savings per bulb or about 32 to 96 average lifetime kilowatt hours in savings her bulb. Now that number may be confusing, which is why I put it in writing. The reason the kilowatt hour savings can be so high, of course, is that the lamp life is being extended. So the savings can be great compared to the consumption of a bulb today, which doesn't last as long.

If you further do the math on what electric rates are you find that if we could save 32 to 96 kilowatt hours per bulb you could afford to pay $3 to $10 apiece for them in stores and those bulbs would still be a cost-effective purchase for you, based on nationally averaged electric rates and the lifetimes of the bulbs. California's rates as we all know are a little higher than the national average so the numbers could go higher still.

What is the national savings potential

after you replace the full stock of bulbs? About 25 to 50 percent of that 200 billion kilowatt hours numbers I gave you before or 50 to 100 billion kilowatt hours a year.

So that's 15 to 30 of the 153 coal-fired power plants that are on the books right now in the US. That number has been changing and bouncing around a little bit. But 153 new coal plants, if they were all built in the US, would torpedo most of the proposed regulations for stabilizing the climate because it is just simply too much carbon.

And I didn't fully appreciate that until a number of distinguished speakers addressed the topic at an event that was held in honor of Commissioner Rosenfeld last year. And there was such an overwhelming focus on climate change at that event that I came out believing that was going to be the major driver for future discussions of this type, not the need to replace power plants per se.

So I think it's fair to say this measure, improving incandescent light bulbs, is one of the largest and most cost-effective, single, greenhouse gas reduction measures

currently under consideration.

How big is the opportunity? Some of you may have seen this study from Citigroup which came out in 2007. And what they're showing here in a set of bar charts is what is the anticipated investment by utilities in each year between 2005 and 2012 on new power plants and fixing up the ones the utilities currently have.

The midpoint estimate is $125 billion, mostly to build new power plants. So I asked myself the question, what amount of efficiency could you buy with the $126 billion they plan to spend on new power plants. And if the future's utility efficiency programs became twice as expensive as the ones that are being run in the country today you could still buy two trillion kilowatt hours worth of savings for that much money. That's half of all the electricity we use in the US today. So I won't dwell on it further other than to say we have not yet begun to invest in the energy efficiency potential that is cost-effective.

The last thing I want to say on what has changed since we addressed this last time is it is pretty clear the urgency of addressing climate

change is a whole lot more focused on today than it was even a year-and-a-half or two years ago.

The quote from Jim Rogers many of you may have seen before. He is the CEO of the largest utility in the United States, which is based in North Carolina. And he is calling for the federal government to regulate greenhouse gas emissions and he is saying moreover, which I think is relevant to our group today:

> "Until business leaders know what the rules will be-- which actions will be penalized and which will be rewarded--we will be unable to take the significant actions the issue requires."

So what he is saying is, yes, in general industry doesn't like regulation. But when it comes to something as severe as climate change it is much better to have certainty than uncertainty.

One last comment on the cost-effectiveness issue. I came across this article recently in The Economist. And The Economist was quoting a utility in Europe named Vattenfall. And they had actually paid their staff to rank all of

the options that utility might pursue or that government might pursue to stabilize the climate. The magic number here is this point right here. Everything to the right of this point costs money on net, everything to the left of this point saves money on net.

So naturally when you do an analysis like this you would hope to start with the measures that are over here on the left and pursue those as fully and as rapidly as you could and only march up to the positive side of the supply curve as you run out of things that save you money. Note that the lighting systems broadly speaking are the third-most cost-effective option they considered. If you actually divided this up into the various things you could do with lighting the width of the bar would be quite wide, as we have heard other speakers say today.

Okay, so let's talk just a little bit. How would we assess the Tier 1 and Tier 2 standards so far? I do think that the California standards successfully established a precedent for states to regulate general service incandescent lamp efficiency. And it is not hard to see the cascading response from various policy makers

thereafter.

Interestingly enough, although the Tier 1 standards have been in effect since January of '06, when I went to the California Energy Commission databases to see how products have changed since January of '06 there are no data in the databases. I know it's partly the result of a settlement of some litigation, but the sooner we can get actual measured results from manufacturers on what products they're shipping to comply with Tier 1 the easier it would be for all of us to know, what have we saved so far, how have product availability and offerings changed, and what more savings can we get.

I think the exemptions in the Tier 2 standards for modified spectrum, vibration resistant, three-way and products at the very high and very low end of the wattage spectrum, they definitely reduce the effectiveness and the total coverage of the standards. So as we look to future standards and we're after a goal of how much CO2 can we save it would be nice to be more broadly inclusive.

Lastly, the wattage plateaus concept that Tim Tutt had originally proposed and the wide

lumen bins that were used, they definitely made Tier 2 simple to understand and they helped this group achieve more agreement about what to.

But they can also lead to gaming strategies like selling dimmer and less efficient lamps to meet the power targets. Which is something that Ecos and PG&E had both called serious attention to at the time the final deliberations were occurring. And I want to show you what I mean.

These are the same products that were shown to us in an earlier industry presentation but I just formatted the numbers a different way. This is the energy saving product that was available from one manufacturer at the time the Tier 2 standards were adopted. It already met the proposed standard so it is going to continue to be sold as is at 34, 52, 67 and 90 watts. And you can see the efficiencies here and so forth. So it was above the curve or above the steps and therefore it needed no change.

These were the two product families they were offering at the time that do not meet the standards. You can see the long-life product here and the standard, soft-white product here. Note

the efficiencies ranging from 9 to 15 lumens per watt and from 11 to roughly 17.

Those two product categories essentially are being collapsed into one down here. And what is interesting is that the efficiency is much lower than in the standard soft-white product. And although the efficiencies are a little bit better than the long-life product the lifetimes are shorter and the products are for the most part dimmer, with one exception just a little bit brighter here. So I don't know that the consumer gets out of this deal what we hoped when we proposed the standard. They're getting less light for less power.

So as we move forward I think if we apply any of the principles that have held in other energy efficiency work that we have done we like to hold the utility or the function that we're giving the constant or make it better and at the same time reduce the energy it takes to provide that.

Here is another way of seeing the same point I just made. These are the two bulbs which were offered prior to the introduction of the standards. Both are non-compliant because they

sit above this proposed standards line here. And so the manufacturer redesigned them down to here to fit right into the very corner of the standard. Just barely complying with its terms.

And there was a five percent reduction in power, but from their more popular product there was actually a 13 percent reduction in light output associated with that. And that's the nature of dimming strategies. The light output drops much faster than the power does. So overall you get an eight percent reduction in efficacy from employing that strategy. We can do better and I think we should.

There are big opportunities to improve incandescent efficiency. This is a visual you have seen from me many times before. It's maybe a retelling of the story Michael Siminovitch showed you this morning.

If you take all the area underneath this curve only about ten percent of it sits in the visible spectrum. Some people say five percent. The vast majority sits in the infrared spectrum. And as we design better incandescent lamps what we are doing is shifting this peak back toward the visible and basically concentrating more of the

output of the lamp where customers can see it and less of it in the infrared and ultraviolet ends of the spectrum where they can't use it to light their homes and offices.

What are the technologies for improving incandescent efficiency? We've talked about some of them this morning so I won't dwell on them all. The fill gas approach is one of course but it is primarily designed for lower percentage increases.

If you want to go for more radical increases one of the options is to reduce the input voltage and to do it in a highly efficient way. Gary touched on this a little bit earlier. If you are going to drop the voltage down you want to use a highly efficient power supply to do that and then you don't use up much of the power parasitically in the conversion. Once your voltage is lower you can do more heating of the filament for a given wattage because you have got more current flow at a lower voltage.

The infrared reflective coatings of course are also a good strategy and we'll see a little bit more about that in a second.

And there is a variety of selective emitters that are being pursued.

The hafnium carbide option has been around for awhile, that's a ceramic type filament.

We've heard about photonic lattices and various research has been done there.

There's some interesting new DOE research with a firm called Foster-Miller where they're looking at super-emitter tungsten lamps and there are many others that we don't even know about yet.

The one that interests me the most at the moment is this one. It's been referred to by a variety of names in various marketing literature. Eco-Boost or Edore or Master Classic. It's a Philips product. And the two examples that you see here on the left and the right come from Philips marketing announcements on their website. This one is a photograph of a sample that I have I my possession. And I am going to just demonstrate it for you but I want to show you what's going on with the product first.

Three of the features I mentioned before are all used in this product. First this is a power supply, in essence, down here inside of this base. And it converts line voltage into low-voltage to allow a higher current, lower voltage

output to go to this lamp.

Secondly you've got a halogen fill gas inside of this inner capsule.

And third, and this is probably the hardest part to see in the visual, this is kind of a spherical cap on top of the lamp here and that allows you to mount an infrared reflective coating that bounces as much of the heat as possible back onto an extremely small filament right there. Because the filament is so short and so compact it's able to take advantage of that infrared reflective coating in a way that a normal incandescent lamp wouldn't.

So what do you get from employing all these technologies at once? What I did is -- and I apologize, I'm stepping away from the mic for a second. What I did is just refer initially to the claims that are made on the package itself. And what they show is this product in a 20 watt version replacing the 40, and in a 30 watt version replacing a 60. And you can see that here. These are the, these are the various sides of the product's package.

This sample was made available to interested parties in December of 2006 at a

European press event and was made available again to interested parties in the January/February of 2007 time frame. So about six months ago.

And you see it has already been labeled with the European label. Only, as Paul referenced, normally you wouldn't see an incandescent product all the way up here at B except for this is a highly efficient model. Notice as well it's labeled with a light output figure of 315 lumens over here and 20 watts. It was introduced in 20 and 30 watt versions with a 3,000 hour lifetime.

And the claim on the box was 315 lumens and 20 watts so we actually sent it off to an independent test lab to find out how it performed to make sure that the nominal claims were validated. And that's in fact what we saw. The nominal claims of 15.7 lumens per watt, when you measure it in a lab you actually get about 16.5 lumens per watt.

This is what the product looks like. And then -- I'm going to step back to the mic here. And just for comparison purposes I'll hold up an incandescent bulb. So you can see the product is actually the same physical size as a

conventional incandescent lamp or actually slightly smaller. And has, according to lab testing, a very, very good color rendering index and all the other attributes that people are looking for in incandescent lamps.

So I'm going to ask Noah if he would take this over to the Commission so they can have a look at it.

ASSOCIATE MEMBER ROSENFELD: How much are you going to charge me for it? (Laughter)

MR. FERNSTROM: It depends on whether you break it or not.

MR. CALWELL: It is, to my knowledge -- It's the only sample I have been able to get a hold of in North America so that's why in my photos you see the box, it looks like it's a little bit beat up. It's traveled a long way.

The other, the other technologies I want to focus on just briefly in terms of things that are available now and have been in circulation for a little while are some LED products. This is a slide some of you may have seen before. It's the Department of Energy's road map for LED efficiency. And these points over here to the left have been actually achieved. The points in

the middle are their research targets. And we're looking at efficacy in lumens per watt.

So this is a fluorescent product. Let's focus a little less on that here. But here you see some older monochromatic LED technologies and some OLED technologies.

This is the line that is the most interesting. This is their commercial efficacy target for white light LEDs. And in the mid-2000s time frame we're sitting around 50, 60, 70 lumens per watt as their target. Of course the laboratory levels being higher because we're looking at commercially available.

So what we did is purchased a couple of samples that are available on the Internet now of this technology and I just want to show you one of those. This one here is what most people think of when they see LED lighting. It's kind of a cool colored, not so appealing, still needs work design. Let's see, you've got to switch that on. So this is not going to make it into the living room of anybody's houses anytime soon. It is very efficient but the color is not great and the light distribution still needs work as well.

So then we tracked down another sample,

which is similar in design but uses light sources that are, uses light sources that are a better color match.

These particular samples were tested by Michael's team at CLTC in part because I know that the measurement of LEDs can be tricky with optical distribution and color and I wanted to make sure it was measured correctly.

So if you'd take a look at that and look at skin tones under it, compare it to some of the samples that Gary has, you can see that the technology has come along quite a ways.

And what we did is then plotted those samples on a graph of light bulbs that are available today just to show you where we're at. So here you see lamp wattage on the horizontal axis and you see efficiency in lumens per watt on the vertical axis. This is the broad cluster of incandescent lamps available in North America today.

Here is the Philips Edore product that I showed you before. Notice it's a lower wattage at 20 than virtually anything that's available here but the efficiencies are comparable to incandescent lamps that are two to three times the

power. So it's a remarkably efficient product.

Here are the two LED samples I showed you. The top one is less interesting to me because the color is so far off what we're used to in homes. This one down here is the one I just showed you. That's very interesting to me. It's a 4.8 watt lamp and provides roughly the amount of light output -- actually I'll just show you on the next slide.

Instead of comparing efficiency to wattage let's get a more realistic comparison, let's compare efficiency to light output. The same data. So these are lumens down here, this is efficacy. So now you can see that this Edore product that I showed you at about 16.5 lumens per watt is roughly double the efficiency of the average incandescent lamp of comparable light output.

The LEDs, still sitting a little bit toward the low end of the light output scale but their efficiencies are on the order of five to six times the efficiency of comparable incandescent lamps of the same light output. Gary?

MR. FERNSTROM: Chris, if CFLs were on that graph where would they show up?

MR. CALWELL: Well we stop at 45 lumens per watt and so CFLs largely occupy this kind of 45 to 65 lumens per watt range.

So this is what's available today. Granted these are initial samples, and in the case of the LEDs they suffer from some of the design flaws and size that the early CFLs had as well. But when we talk about what could we do a year or two or three from now I wanted you to keep these examples in mind.

I said before we wanted to say just a word about the Tier 2 standards and where we might go from here. When you plot the Tier 2 standards on the basis of watts versus lumens they look like these nice, reasonably flat plateaus that have some general logic to them.

When you actually look at it on the basis of efficacy versus light output, so this is the function or the service that a light bulb provides, this is how efficient it is. The plateaus actually look very counter-intuitive. They have kind of a saw-tooth shape. And this is what Noah and others had referred to before.

When you create a specification that is this unusual in its shape it is not surprising

that a lot of new products migrate toward the lowest valleys in the specification because it's the easiest place to comply.

So what we did instead was we ran a statistical analysis in Excel and said, what is the best-fit curve to the light bulbs that are available today. That's this gray curve right here. And if it has a familiar shape to those here from the Energy Commission, it's because you adopted a standard virtually identical to this for external power supplies in 2004 and you updated it in 2006. And that curve plotted functional output against efficiency and it used a natural logarithm because that's the nature of the product. That's physics.

And so if you want to pass a standard that mirrors the way the products behave you can start with the best fit to what they look like today and then decide, well okay, we want to raise this, how are we going to raise it.

So this is the same information you saw before. I made the dots very, very small because it doesn't matter what they are, this is just a cloud of data down here. Suppose we wanted to go to a, let's call it a Tier 3 and a Tier 4.

We have given you two alternative options to consider here. The first one in dark blue and light blue is a multiplier of the best-fit line. So we just take the best-fit line across the board and multiply it so that we're able to say in this case, this line is 67 percent more efficient than this one or it's a two-thirds improvement in efficiency. This one is 150 percent improvement in efficiency.

So that's one way to do it, simple, across the board multiplication. What you see is that this gentle slope down here starts to get a little more sharp as you multiply by 1.5.

So then partly in deference to the presentation our Australian colleagues made before we said, well what if you did it another way. Notice here we have a typical 40 watt bulb, a typical 60 watt bulb, 75 and 100 in terms of their light output. What if we aim to hit the same point for a 60 watt bulb but we did it on an adder basis instead of a multiplier basis. So now you're just shifting the curve up and keeping the slope of it exactly the same. And that's the dark green and the light green curves for what would be, in effect, a Tier 3 and a Tier 4.

So I don't think I have a strong philosophical preference as to which of these two might be done, the multiplier or the adder. But either of them is defensible on the basis of how products today actually behave and what's possible technically in making the products better.

I am just about to conclude here and I wanted to share with you -- At the ACEEE Summer Study in 2006 a number of people in this room and others got together to see if they could hammer out what they called an efficiency philosophy where there are six or seven key themes that could describe what it involved in making a product more efficient regardless of what kind of product it is. These were the seven themes that emerged in the draft and I just highlighted four of them for you because they relate to what we're talking about here today.

Fist, that products that are going to be called efficient should always convert power efficiently.

They should closely match their power consumption to the level of service or function being performed. That's why I showed you the shape of curve that I did. This is why I

emphasize the need for efficient AC/DC conversion in the base of a low-voltage halogen lamp.

This one down here. Manufacturers should test the overall efficiency of their products according to standard test procedures and they should disclose that information on product packaging and public websites.

I think Paul Waide gave us an excellent example of that in the A-B-C-D-E-F labeling that's done in Europe. We do some of that in the US but we don't do it very well. And we don't so far provide efficiency information on light bulb packages. We tell you watts, we tell you lumens, but unless you're really good with math or you carry a calculator to the store you don't know what the efficiency is of the product.

And then lastly and most importantly for this discussion, product capability or performance should never be marketed or promoted by the manufacturer or retailer in terms of power consumption. Why do customers think that 60 watts tell them how bright a light bulb is? Because the products have always been marketed that way.

And so I think the consumers are in a hole now. And if we continue to leave them there

and feed them and comfort them there and say, we'll give you information in the way you understand it, we're never going to get out of that hole.

So what I would submit to you is that if we're going to pursue fundamentally new light bulb regulations let's start giving consumers the information in a way that actually makes sense. Not just in the way they have come to understand it in the past.

These are the European labels. You can see it's just another example of the one that Paul showed you. Categorical labels have been shown to work very, very well because consumers like to know, where does my product fall compared to others I could buy.

This is a slide many of you have seen before. If you were to go buy a 60 watt light bulb from one manufacturer in the US these are the six different flavors of it you might see. All of them bear the required information from the Federal Trade Commission on lumens, watts and hours.

But by far the most distinctive, similar element of every one of these packages is that the

wattage is the most prominent information on the package. The wattage numbers tend to be emphasized the most, tend to be in the largest text. And frankly I'd say it's no wonder consumers think watts tells them how bright a light bulb is. That's what they have been given.

So if we are going to do mandatory labeling there are some other ways we might do it that will drive purchase changes. No one is suggesting that we get rid of the three things the Federal Trade Commission currently requires on the light bulbs but two more items should be required.

One of them would be the yearly electric bill to operate the bulb in dollars. That's the kind of information we give people when they buy appliances or when they buy other products.

And lastly, why don't we give them lumens per watt information and teach them that higher numbers are better and they should look for more efficient products.

One other thought worth considering. Maybe product wattage should not be given greater prominence on packaging and marketing materials than light output or efficiency. If we want them to buy on the basis of light output and efficiency

let's make that more prominent.

My colleagues in our Portland office run a marketing operation and they assist with retail programs for lighting so I asked, I gave them this challenge. I said, suppose you had to put information on a light bulb package to convey all this, how would you do it. And this is what they came up with as a first draft. I don't portend to you that it's perfect or that it's final but I submit it for consideration.

They said, okay, categorical labeling is good. Let's have four categories, not recommended, good, better and best.

Let's give consumers two attributes that they should be aware of and that are worth comparing. How long does the lamp last and how efficient is it. Let's put a dot on there to show them where this product is compared to other options they might buy.

And let's let them know that not recommended is generally a low efficiency product or one that has a very short life. A good product is one that is slightly more efficient. A better product is slightly more efficient still and may have quite a long life. And then a product that

would fall in the best category combines the best attributes of both, it's long-life and highly efficient.

As you might imagine CFLs land up here but so too could some of the really advanced incandescents that Shane was referring to earlier.

We give the customer the annual operating cost of the bulb right here so they can say, gee, I'm about to spend 25 cents on this light bulb. How much more is it going to cost me to run than that. Or gee, it's going to take me a year or two to pay this back but it's worth spending $3 for because I'm going to get my money back.

Notice down here the other change we made is instead of putting the wattage information first or second or most prominent, light output first, then efficiency, then life, then power consumption. And we give the advice to consumers at the bottom, to save energy costs find the bulbs with the light output you need and then choose the one with the highest efficiency.

So this is an example of how it might be done. I hope it's the beginning of a conversation and not the end because we can do much better.

My final slide. I just want to suggest some objectives of future policies and programs. And these are in no particular order but I submit them for your consideration.

When I started in my career in energy efficiency in 1988 my boss was a man named Ralph Cavanagh, who many of you know. And Ralph said to me that if you want to make change in a market you should align the profit-making objectives of the main players in the market so that what they do to make money is what helps the environment and vice versa. That has been no less true today than it was then.

And so I suggest that we should try to find ways to align manufacturers' and retailers' profit-making objectives with the broader societal objective of stabilizing the climate. And that way their natural desire to make a profit would lead them to produce products that are radically more efficient than we have today.

There are two, straightforward ways to do that. One of them is rebates for selling efficient products, one of them is fees for selling inefficient ones. And as many people have said before me, you can use one of them to pay for

the other.

The Commission, I would encourage you to assign a meaningful economic value to saving CO2 and to include it in what you define as cost-effective efficiency. It is not just about saving energy but also about CO2.

I think if you can establish simple, transparent, broadly applicable standards that become more stringent soon, and also give manufacturers a second, long-term step or a road map it will help them minimize the kind of uncertainty that Jim Rogers was talking about in that previous quote.

I hope you can capture as much cost effective energy and carbon savings as possible while minimizing loopholes and gaming.

And as I said at the end there, to arm consumers with the new information that will help them escape the trap or the hole that we've got them in where they're confusing power consumption with lumens and efficiency.

With that I'll conclude and thank you very much.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Chris. Noah, why don't we go right into

yours.

MR. HOROWITZ: Hi, I'm Noah Horowitz with NRDC and I stand between you and a long drive home so I'll do my best to catch up some time.

PRESIDING MEMBER PFANNENSTIEL: No, actually you stand between them and a chance for public input. Then a long ride home. (laughter)

MR. HOROWITZ: I'll go even faster then. Thanks for the correction.

So I have the privilege and the challenge of getting the phone calls. My minister, my commissioner said, I want to ban these bulbs, what should I do? And over time those calls have evolved to, we want to set a technology-neutral, performance-based standard, which is where I think there is general consensus amongst industry, regulators, environmentalists, all stakeholders. That's the way to do it. It doesn't matter what type of technology as long as it meets a certain efficiency threshold and also gives people good performance. So I'm glad we're there.

I am not going to give you a proposal today. Instead I am going to kind of distill down what are the four or five things you need to think

about if you're considering a standard, which California is.

So there are four things. The scope. What is the bulb? It's not just incandescents. Is it just things that screw into a socket of a certain size? And it gets complicated. And then there are a whole bunch of specialty products. Do you mean the one in my refrigerator or oven that has special needs? Is that covered or not covered or does that have special considerations?

The structure. How do you do it? Do you just say, you can't be incandescents and you must be CFLs. I think this agreement we're not going to do that but you should have some sort of performance requirement.

The stringency. Are we setting a floor or are we setting a couple of tiers? And if so, what is the basis of those tiers?

And when does this need to happen? How soon is soon enough? And not too soon so that the manufacturers can gear up and we have a smooth transition. Nobody wants people to go shopping for bulbs and there is no bulb available on the shelf. That's not what this is about.

So let's start with the scope. What is

regulated? Is it general service bulbs? Although most people outside of the room don't know what that means, let alone most regulators outside of California. Is it just screw-base bulbs or are we also considering pin-base bulbs? Outside of the US there are a lot greater penetration of non-screw-base type bulbs.

What is the range of bulbs that we're considering. There are a lot of bulbs beyond the 40, 60, 75 and 100 that are sold. If you limit the coverage of that could you continue to sell 150 watt bulb, for example? How would that work? And similarly on the lower end.

And then if we're focusing on general service lamps, reflectors or directional lighting. They might not be covered by this standard and can and should those be covered by other standards at the federal level or local if you're not preempted.

Then there are a whole bunch of bulbs. We all know what the plain vanilla, 60 watt light bulb is I think. But there's certain bulbs marketed as enhanced, full or modified spectrum. We have three-way bulbs. Would those be covered? What about a vibration resistant bulb?

Or my nightmare would be a bulb that's called shatter-resistant. So could you take today's incandescent, put a five cent coating on it, now you have a 30 cent incandescent competing against the multi-dollar enhanced halogen and CFLs and so forth.

So we need to be really careful how broadly we draw the box. And if we exempt things is that okay? So I just went over that. And the concern is, what if you exempt something. If the goal, I think, that there's emerging consensus, let's set a floor sufficiently high that today's inefficient incandescents are no longer available on the shelf.

So you have this next generation of incandescents, energy-saving halogens and CFLs on the shelf competing head to head. And maybe CFLs would prevail much more than the 10, 15 percent sales that are occurring now. That's the playing field we're all shooting for.

What if there are these exempt products that are still there for a quarter? Those are going to dominate because as we painfully know, most people buy on first cost.

So my nightmare just occurred. For

Father's Day my daughter scraped her arm, she's okay. We were at Walgreen's and at the front of the store there was this huge display, this is in San Francisco, of vibration service household light bulbs. I've been in discussions with the industry and they told me, those are very expensive and very rare. Yet in San Francisco in the Walgreen's they had a whole display of these.

This is not an indictment or criticism of Feit, who is also a major manufacturer of CFLs. I don't know if you can read this but these are 60 watt bulbs that are giving off ten lumens per watt. Lower than today's incandescent. If these were exempt this would be your default bulb. And today, without any market motivation, these are only a quarter. And it was printed on the box, Wow! $3 for a dozen bulbs. Today you can buy these for 25 cents.

So we need to be very thoughtful of how we define the bulbs. And it could be that these specialty bulbs might not have to hit the same target. We might give them special dispensation. But outright exempting them is a recipe for disaster.

So what's the starting point in all

this. As Chris much more eloquently stated, people for better or worse buy bulbs by wattage. I think even half of us in the room would be hard-pressed to say, how many lumens is your typical 75 watt bulb. It's around 1170 lumens. So I just put all these numbers down there. And I think it's important to recognize that efficacy increases the brighter the bulb is for typical designs. So a simple hard number of saying, it should be 15 lumens per watt or so, a sliding scale makes more sense.

So in terms of stringency what are we trying to do? Are we trying to identify the bare minimum so that today's inefficient, incandescent bulb can't be sold? Or if there are a bunch of technologies that are better than that should we set the floor a little higher.

Then secondly, are we just going after that first tier or are we also at the same time trying to identify and set that second tier to send a signal to manufacturers, here's what's coming, make your manufacturing,design and investment considerations with that in mind.

If so is that roughly 45 lumens per watt, just below today's CFLs. I don't know what

the answer is but there's some consideration should you do both of these at the same time or not. And there are also implications of this federally. The Department of Energy is supposed to set a standard by 2009 for these bulbs that would go into effect July 2012 if their three-year lead time goes into effect. So California may want to set two tiers but may be preempted, so you need to be cognizant of that.

So do you do one size fits all? In Nevada they just set a flat-out 25 lumens per watt. That might work for the 100 watt bulbs that are being replaced but would be much more challenging for the 40s. So a single one size fits all sounds good and makes for much shorter legislation policy but it might not be best for both consumers and also for industry.

Another thing you could do is set some lumen bins, just like it showed earlier. You could say, you know, if this roughly represents the bulbs around today's 100 watt bulb that would have a lighter lumens per watt number. And for the 75s, if you were to bracket around that, 22 lumens per watt and so forth. These lumens per watt is exactly what was proposed by the European

industry just a few days ago.

Chris showed the way you could do it is have a continuous curve. Assuming some sort of baseline and then have efficacy as a function of lumens. This would minimize the gaming that we've heard different discussions about.

Another way to do it. This is the preference of the lighting industry and you heard from them earlier today. Is assume lumen bins and say, that's today's 100 watt and in the future it couldn't be more than so many watts. And these numbers are just hypothetical but just to show how it could work. So this is another way that one could structure a potential proposal.

One of the concerns with these lumen bins is some folks might move to the left-hand side. And there is a very wide range in efficiency within those bins and consumers could be getting dimmer bulbs. So if they went all the way to over here it would be much less bright than the 75 watt they're used to and they might bump up to the next bin and you could be losing a lot of the potential savings.

And it also continues the reliance on selling based on watts.

Something we haven't spoken about much today, the specification for compact fluorescents. That only talks about efficiency or efficacy but a whole laundry list of parameters. People were very concerned. People need to have a good experience with CFLs. So now we're setting a bar somewhere here to be determined what that looks like. Should anything else be in that standard?

Should there be a minimum lifetime? A thousand hours or 2,000 hours, something like that, to avoid somebody from making today's incandescent a 500 a 250 hour lifetime. We don't think that would happen but that would help drive the cost down even further.

Color rendering index. Some people have said we should have a minimum color rendering index in any standard, regardless of the technology. Would it be okay if you flicked a switch and there is a ten second delay? In the compact fluorescent world they said that needs to be much less than that. Do we want all technologies to have to meet that?

It might give off a lot of light out of the box but over time its light output declines dramatically. Some of the early CFLs were very

challenged that way. Let's make sure we're not giving people a bad experience.

We have heard a lot of concern of hey, whatever standard you do, even though it may not be set at CFL levels, are going to drive people to CFLs and a lot of the CFLs aren't ready for prime time. The good news is in the United States an earlier version of the ENERGY STAR spec was cut-and-pasted into federal law. That just went into effect so we have a mechanism for regulating CFLs. So all these horror stories, the CFLs are bad, there are going to be a lot of cheap, poor quality CFLs coming in, we have a hammer there at the federal level to address that.

In terms of timing. Do you do everything at once or do you do it in staggered dates? And we've heard some of the pros and cons. One structure could be you could start with the 100s or the 100 and 75 watt equivalents. That would go into effect at Time T equals zero. And it's that right starting point, what industry is proposing at 2012 or something earlier.

And then X months later the 60 watts would go into effect. That's the structure of the industry proposal. And then Y months later the

40s and the 150s could go into effect. And there are many ways you could structure this.

As Chris and Paul alluded to earlier we need to do all this in conjunction with what's on the label. We are already restricted to a certain extent. The Federal Trade Commission says, here is what at minimum must be on the label. It's an open question if we could require additional things on the label as long as we have those.

And the concern the way I see it -- I wasn't responsible for these flashing question marks, my assistant did that. (Laughter) I'm in awe. Okay, sorry. (Laughter)

So let's say somebody today is buying a 75 watt bulb. So the way the standard would work the 100 watt would become a 70 watt bulb. And that's a much more expensive bulb. So what are they going to do there? My numbers aren't appropriate here but basically what I am trying to say is if you're used to buying a 75 watt bulb you're going to look for whatever is closest to that. And what was the 100 watt bulb may be the 70 and that may result in your buying a brighter, what used to be a 75 watt bulb but you're only saving five watts. And Michael had some better

slides to explain that.

So that's the end of my comments. I'm very sensitive to the time and sorry for the brain freeze there at the end.

PRESIDING MEMBER PFANNENSTIEL: Excellent, thank you.

We've heard a lot today and I think that there's a lot to digest in one day. But I would like to open now to any public comments. Anybody here who would like to either ask a question or make a comment on the subject that we have been discussing today?

MR. GREENBURG: Well as I've been listening one of the things that I keep thinking about is that we haven't really addressed very much in terms of non-screw-in, high efficacy products, which are definitely a significant part of the market. I'm thinking in terms of hardwired fixtures and portable plug-in lamps that could be part of this transition.

So if there is a transition that takes place perhaps that would be one phase where we make it so that customers who want to purchase a hardwired fixture, let's say not a recessed one but one that is flush-mount or a ceiling fixture

or wall fixture, would have to buy a high-efficacy fixture. The same thing with a table floor lamp for awhile. At least until the high-efficacy incandescents take their place in the market.

Something like that. It doesn't perfectly work in my mind but I'm just, I just want people to think along those lines and not exclude fixtures and plug-ins and so on.

PRESIDING MEMBER PFANNENSTIEL: Thank you. Others with their comments?

MR. FERNSTROM: This is Gary from -- I'm sorry, go ahead.

PRESIDING MEMBER PFANNENSTIEL: Go ahead, sir.

MR. NELSON: I'm sorry. My name is Bruce Nelson, I'm with Pacific Coast Lighting. I am also representing the American Lighting Association today. This has been a great forum. I've learned an awful lot about what's going on in the world.

I guess I'd like to say that we kind of represent in some ways the consumer because our products are what your products are going into. And education is going to be big. We really have to educate the consumer. You're talking about

labeling and how, you know, buying a bulb that's got wattage instead of lumens.

I think that you're going to have to work with the lighting stores to teach, to teach these people how to sell bulbs under a different number. People are so used to that.

The ALA is very much behind energy efficiency and looks forward to working with this panel and the Commission to help develop these policies to go into effect.

I guess I just want to say that we want to, we want to make sure that we look at all types of lamps that are out there. And that we don't necessarily jump into making a change to all CFL because it will not work in all applications of lighting. That those specialty type bulbs are considered. And it may be exempted or maybe phased-in when the technology is there to provide a higher efficiency choice. So thank you.

PRESIDING MEMBER PFANNENSTIEL: Thank you, sir. Gary, the results?

MR. FERNSTROM: Okay, Gary Fernstrom from PG&E. I wanted to report on our panel of experts' performance here. We had a limited number of participants. Only eight attendees

chose to guess and they were pretty good.

So all eight of them correctly identified number one as a fluorescent. This is a 15 year old dimmable compact fluorescent that I bought from TCP around 1995 or so. So I put that in there to show that dimmable technology isn't new. And it's done better today but it was done pretty well even then. Because as you can see I've dimmed all of these products.

Number two here we didn't do quite so well on. Four guessed this as a CFL and four as an incandescent. In fact it's a 60 watt General Electric Company Reveal Lamp.

Number three I think fooled everybody, which was amusing to me. All except one identified this as a CFL. In fact it's a 42 watt Sylvania Capsylite halogen lamp.

All eight identified this one as an incandescent. It is, it's a 60 watt Philips general service incandescent.

Six of the eight identified this as the CFL. In fact it is. It's a 22 watt dimmable product made or imported by U-Lighting and it is high power factor and has a particularly good dimming range.

So I would surmise from this that many of the audience either didn't want to vote or couldn't tell the difference or weren't interested. And of those that did vote they were pretty good. All except for the halogen Capsylite, which they took to be a CFL and it was an incandescent.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Gary. That's actually a very interesting way of looking at it.

Other comments in the room?

Anyone on the phone?

Any thoughts or comments from the dais?

Gary Flamm, any final comments?

MR. FLAMM: I have no final comments.

PRESIDING MEMBER PFANNENSTIEL: Okay. I would just as a --

ADVISOR TUTT: Gary, excuse me. I don't know that there were written comments expected from this workshop. Is it in the notice somewhere? Do you know?

MR. FLAMM: The notice said, I believe, June 5th. So I believe we should establish some kind of reasonable date from today. Anybody who didn't get their thoughts presented should present

them to John Sugar, he is the contact person on the notice. And so I would recommend maybe within a few weeks, anybody that wants to make additional comments that didn't feel like they were heard to please send those comments to John Sugar.

PRESIDING MEMBER PFANNENSTIEL: We'll establish the date. Perhaps ten days from today, which would be Friday the -- What's the next Friday?

MR. FLAMM: The 29th.

PRESIDING MEMBER PFANNENSTIEL: The 29th. Does that sound okay?

MR. SUGAR: That would be good. I'm John Sugar. And if you would please -- If you have the notice there is a docket number on the notice. Please send your material to the docket. If you do not have that and you send it to me I will docket it for you.

But it's important that any comments that you send in make it to the docket so that they may be officially recognized as the Commissioners consider comments from today for the Integrated Energy Policy Report. If anyone needs my address I have cards.

PRESIDING MEMBER PFANNENSTIEL: Thanks

for that, Tim.

This was a really full day and I want to thank and appreciate all the panelists of the various panels all day long. We all did learn a lot. And I think that if there is anything that everybody has said is how meaty this was and how we learned.

I am trying really hard not to say it was an enlightening day or an illuminating day but it's hard to ignore that. (Laughter). With nothing else --

ASSOCIATE MEMBER ROSENFELD: Jackie.

PRESIDING MEMBER PFANNENSTIEL: Yes, Art.

ASSOCIATE MEMBER ROSENFELD: I had one question to ask for Paul Waide. Paul, we got an advanced copy of your talk but what you actually showed has quite a few, a bunch of new stuff. Are you going to leave that to go up on the website and replace what is already there? I just want to make sure that we get the latest version.

MR. WAIDE: Absolutely, Commissioner. Yes, is the answer. I want to make sure that we take the old copy off, which actually has an error in it.

ASSOCIATE MEMBER ROSENFELD: Right. Eight percent went to five percent or something.

MR. WAIDE: It was referring to larger numbers but --

ASSOCIATE MEMBER ROSENFELD: I just want to add my comments. I thought -- Jackie made the pun but I thought your talks were very, all of you were very thorough, very interesting, very commendable. Thank you very much.

MR. FERNSTROM: So I've replaced the second light bulb here with the LED version. For those of you that would like to see what the LED looks like it's right here.

PRESIDING MEMBER PFANNENSTIEL: Thank you, Gary. Thank you all, we'll be adjourned.

(Whereupon, at 4:22 p.m., the Committee workshop was adjourned.)

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CERTIFICATE OF REPORTER

I, PETER PETTY, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Committee Workshop; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said workshop, nor in any way interested in outcome of said workshop.

IN WITNESS WHEREOF, I have hereunto set my hand this 14th day of March, 2007.